

**The Impact of a Pre-Borrow Requirement for Short Sales
On Failures-to-Deliver and Market Liquidity**

Robert J. Shapiro and Nam D. Pham

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I. Introduction and Summary

Since 1989, many investors, scholars and market analysts have urged the Securities Exchange Commission (SEC) to address the problem of failures-to-deliver (“fails” or FTDs) of shares sold short, or “naked” short sales. Since 2004, the SEC has taken a number of steps to discourage FTDs and encourage or require investors and broker-dealers to resolve their outstanding fails, principally through the provisions of Regulation SHO (Reg SHO) and its amendments. These efforts have reduced fails during certain periods, yet the numbers of fails also have periodically risen to record levels. Moreover, very large-scale naked short sales and the FTDs they produce played a role in the sudden and unmanaged collapse of Bear Stearns and Lehman Brothers, events which triggered the unprecedented financial and economic turmoil here and abroad of the past year. Despite stringent measures taken by the SEC during this crisis, fails continue to persist at levels greater than those that pertained before Reg SHO.

This analysis will examine why this problem remains so serious. We also analyze the benefits and costs of adopting an approach used in other national markets to prevent or eliminate most fails: Require that short sellers borrow the shares they plan to sell short before their sales are transacted. The data and other evidence will show that a “pre-borrow” requirement could virtually end naked short sales at little or no cost to the efficiency and liquidity of U.S. capital markets. Our findings include:

- Current regulation has not stemmed failures-to-deliver in meaningful ways. In the first three months of 2008, before the collapse of Bear Stearns, fails on any given day affected almost 4,000 companies and averaged more than 1.1 billion shares, or more than twice the average levels of both the previous year and the first 15 months of Reg SHO. These fails were sufficiently concentrated to affect share prices of many stocks: 100 companies or less than 3 percent of those with fails accounted for more than 70 percent of the fails.
- As the financial and economic crisis unfolded, FTDs increased sharply, reaching more than 2 billion shares in July 2008 with an estimated value of \$30 billion, based on share prices one month before fails soared and helped depress prices. Using mark-to-market pricing, the value of fails increased by half from third quarter 2007 to third quarter 2008.
- These fails were linked closely to sharp increases in short sales, including those affecting Bear Stearns and Lehman Brothers. From first quarter 2007 to March 2008, short sales

¹ The research for this study received support from Overstock.com. The analysis and conclusions are solely those of the authors.

of Bear Stearns increased four-fold, to 23 million shares, while failures-to-deliver those shares increased 145-fold to 14 million shares or 59 percent of the stock's short interest. Despite the SEC's emergency measures to stem naked short sales, the same dynamics unfolded at Lehman Brothers: From third quarter 2007 to September 2008, short sales of Lehman increased four-fold to more than 100 million shares; and failures-to-deliver those shares increased 151-fold to 50 million shares or 46 percent of the stock's short interest.

- FTDs declined in the fourth quarter of 2008, compared to their historic highs at the height of the U.S. financial system crisis in the third quarter. While SEC regulation played a role, especially ending the options-maker exception to Reg SHO and thereby reducing fails in optionable threshold securities by 77.2 percent,² naked shorts and their attendant fails have remained at troubling levels. Average monthly fails of more than 525 million shares during the fourth quarter were greater than the average quarterly fails in the first year after Reg SHO was implemented and comparable to levels in mid-2006. Average monthly fails per-security of nearly 367,000 shares in the fourth quarter of 2008 also were higher than those reported during any other quarter since Reg SHO and nearly equal to those in the third quarter (372,000).
- While we should expect a decline in short interest and FTDs following a sharp decline in equity prices, regardless of regulation, measures other than average monthly levels of FTDs on a quarterly basis show fails remaining at very high levels in late 2008. Using SEC data to track maximum fails in December 2008 for companies with at least 10,000 fails, we find that despite the new close-out rules and the end of the options maker exception, maximum fails in December 2008 reached 885 million shares and maximum monthly fails over the fourth quarter averaged nearly 1 billion shares. (Figure 1, below)

To examine further the broad impact of FTDs and their relationship to other market features, we built a database of 5,500 companies identified by the SEC as having at least 10,000 fails at some time during the period January 2007 to December 2008. Our database uses daily number of FTDs of each company in this set each day of each month, and calculates monthly FTDs based on the highest FTDs for each company in that month.

- The database establishes that large-scale fails are an economy-wide problem and not limited to stocks from one or a few sectors, or to shares traded on a particular exchange. Rather, these substantial fails are distributed widely across companies from every economic sector, and listed on all major exchanges and over-the-counter markets. They also affect companies with market capitalizations ranging from micro-caps to large-caps, and companies with both high and low levels of insider ownership.
- The decline in fails in the fourth quarter of 2008 does not suggest that the measures already taken are sufficient: The fails remain at high levels, and the current measures would not protect the system from experiencing enormous increases in naked short sales during a future sectoral or systemic meltdown.

² SEC, Office of Economic Analysis, "Impact of Recent SHO Rule Changes on Fails to Deliver," memo, March 20, 2009. The OEA memo uses daily average FTDs on two random days, July 17, 2008 and December 31, 2008.

- Regression analysis of this database also establishes a close relationship between short sales and fails, across sectors, exchanges, market caps and insider ownership. Despite the expectation of some observers that this connection would be limited largely to micro-cap technology companies traded over the counter, the analysis found the strongest correlations between higher short sales and higher fails in both the aggregate of all companies and in those in the consumer goods, financial and industrial goods sectors, in stocks traded on the NYSE and Nasdaq, and among large-cap, medium-cap and small-cap companies.
- Regression analysis of this database did *not* find a close or significant relationship between short sales and trading volume, suggesting that short sales are *not* a pertinent factor for a stock's liquidity and that other factors drive the liquidity of individual stocks and the overall market. This relationship was strong and significant *only* for companies in the consumer goods sector. The analysis found only a weak relationship of modest statistical significance between short sales and trading volume for basic materials companies, shares traded on the Nasdaq, and large and medium cap companies. However, there were no significant connections between short sales and trading volume in the other seven economic sectors, for stocks listed on the NYSE or traded over-the-counter, and for small and medium-cap companies.
- The database also shows that overall, financial companies, the focus of the SEC's recent emergency regulation of short sales, are generally *less* vulnerable to short sale abuses than companies in other sectors. Using FTDs as a share of short interest as a proxy measure for such abuse, the analysis found that over 2007 and 2008, fails-to-deliver represented 2 percent to 4 percent of short interest for among financial companies, compared to between 4 percent and 11 percent for non-financial companies.
- Using this measure, the analysis also found significant levels of abuse in all markets and across all market caps, but much higher levels for stocks traded over-the-counter and for micro-cap companies.
- In addition to the role of naked short sales and the fails they produce in the abrupt, unmanaged and widely disruptive collapse of Bear Stearns and Lehman Brothers, large scale FTDs were closely associated with the precipitous decline in the value of many companies that used floorless-convertible financings. The SEC also has noted the role of naked short sales in other cases of stock manipulation and damage to confidence in U.S. markets.
- We also examine recent research on the impact of naked short sales, including a new evaluation by the Australian Securities Exchange of new rules to sharply curb the practice: They found that naked short sales increased volatility in stock returns without producing more efficient prices. They further found that based on bid-ask spreads, trading volume and order depth, naked short sales may decrease market liquidity.
- Studies of the impact of the SEC's recent emergency rules for U.S. short sales further suggest that its strict regulation of short sales in financial firms, including a pre-borrow

rule, did not impair market liquidity: Increases in bid-ask spreads in this period, for example, equally affected stocks subject to and not subject to the new restrictions.

- The experience of the Hong Kong market supports these studies and the implication of our regression analyses that a pre-borrow requirement for short sales would not damage market liquidity. Over the 10 years since 1998, when Hong Kong applied a pre-borrow requirement along with uptick rules and strict short-sale disclosure and audit measures, daily trading on the Hong Kong exchange increased 172-fold, and the average daily value of those trades rose 111-fold. Hong Kong markets also avoided the steep spike in short sales and FTDs that occurred in other markets following the Lehman Brothers collapse.
- Finally, we find that the application of a pre-borrow requirement would not entail additional costs for short sellers, since current law and regulation already require short sellers to bear the cost of borrowing and delivering the shares they sell short.

We conclude that the current regulation of short sales has not effectively controlled failures-to-deliver and the naked short sales which usually produce them, imposing large costs on the shareholders of many companies across economic sectors, exchanges and market caps. We further conclude that naked short sales and the FTDs they produce played a significant role in the abrupt and unmanaged collapse of the financial institutions which in turn triggered the current U.S. and global financial and economic crisis. We conclude that new regulation of short sales, including pre-borrow requirements, should be able to effectively control naked short sales and failures-to-deliver at no appreciable cost to the liquidity or efficiency of American markets.

II. SEC Initiatives to Address Failures-to-Deliver and Naked Short Sales

After nearly 15 years of investor complaints, hearings and investigations of FTDs and naked short sales, the SEC took its first major action in this area since the 1930s in July 2004, when it adopted Regulation SHO. Reg SHO took effect in January 2005, but it left a number of aspects unaddressed, which limited its effectiveness. In particular the original regulation included “grandfather” clauses which exempted from mandatory resolution both those fails which preceded Reg SHO and fails which accumulated during the five-day period that triggers a stock’s designation as a “threshold security” subject to Reg SHO requirements. The SEC closed these grandfather clauses in June 2007. Nevertheless, SEC data showed that FTDs continued to rise. In April 2008, the SEC proposed stricter regulation, declaring it unlawful for a short seller to deceive a broker-dealer about the investor’s intention or ability to deliver a security sold short, but also held that sellers would not be liable for relying on their broker dealers to borrow shares.

The Commission also has affirmed the substantial threat that naked short sales can pose to individual companies and the integrity of the financial markets. In July 2006, for example, the SEC noted,

... we are concerned that large and persistent fails to deliver may have a negative effect on the market in these securities ... they can be indicative of manipulative naked shot selling, which could be used as a tool to drive down a company’s stock

price.³

These concerns reflect a long history of manipulative, large-scale naked short sales. The most widespread instances of such abuses occurred in the death-spiral financing schemes of the latter 1990s and early years of this century, when large-scale naked shorts were used to damage up to hundreds of companies. Our research into 357 instances of death-spiral financing found that within one year of entering such financing agreements, 355 of the 357 companies declined in value. Adjusted for changes in the market over the same periods, these stocks subjected to large-scale naked shorts lost on average 68 percent of their market value in the first year.⁴

Moreover, large incidences of FTDs have persisted since the eclipse of death-spiral financing and throughout the period of the Reg SHO reforms. For example, we conducted a survey of stocks listed as Reg SHO threshold securities over the first 15 months of the regulation, from January 7, 2005 to April 3, 2006. Over this period, 500 NYSE companies and 516 Nasdaq companies were designated threshold securities, reflecting in each case fails of at least 10,000 shares accounting for at least 0.5 percent of their outstanding shares.⁵ SEC data showed that the Regulation was not achieving its purpose: Nearly 30 percent of the NYSE threshold securities and 25 percent of the Nasdaq threshold securities remained on the list for more than 18 days, the period by which Reg SHO intended to force the resolution of outstanding fails. Moreover, 48 companies from the two exchanges remained on the list with large numbers of unresolved fails for at least 60 consecutive trading days. And in the closing months of this 15-month period, total outstanding fails averaged about 500 million shares on any given day, greater than in the months before Reg SHO and with an average duration longer than before Reg SHO.

The SEC recognized shortcomings in the original regulation and adopted a series of additional amendments. In June 2007, SEC Chair Christopher Cox called naked short sales, “a fraud that the commission is bound to prevent and to punish.” At that point, the Commission amended Reg SHO to eliminate the “grandfather” clauses, so that all then-outstanding fails had to be resolved within 35 days, including those created before Reg SHO and those accumulating during the five-day qualifying period for inclusion on the Reg SHO threshold list. They further directed that all subsequent fails in threshold securities should be closed out in 13 trading days.

These new measures failed to stem the problem. SEC data for the first three months of 2008 show that on any given day of that period, almost 4,000 companies had outstanding fails of at least 10,000 shares, totaling on any given day an average of 1.3 billion shares – more than twice the monthly levels in the first 15 months of Reg SHO. Even before the financial crisis erupted in March 2008, the number of firms with large fails and their total fails both were rising. For example, the sum of the maximum fails in stocks with at least 10,000 fails in January and February 2008 totaled 1.1 billion shares in each of those months. By March 2008, outstanding fails surpassed 1.8 billion shares, a 60 percent increase over January. (Figure 1, below)

³ SEC, 17 CFR Part 242, Release No. 34-54154, www.sec.gov/rules/proposed/2006/34-54154.pdf.

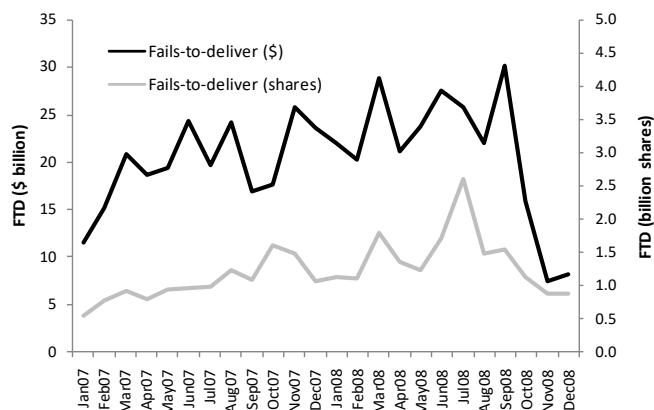
⁴ Cited in Comments on Proposed Amendments to Regulation SHO, Rule Number S7-12-06, Robert J. Shapiro, September 14, 2006; <http://www.sec.gov/comments/s7-12-06/rjshapiro5967.pdf>

⁵ *Ibid.*

The SEC fails data also show that these huge FTDS were concentrated in a relatively small number of stocks. In the first three months of 2008, 100 companies or about 3 percent of those with at least 10,000 fails accounted for over 70 percent of total fails or 735 million fails out of an average total of 1.1 billion fails. By March of 2008, the top 100 stocks with at least 10,000 outstanding fails each had an average of 930,664 shares that had failed to deliver.

The financial crisis has increased interest in the incidence of naked short sales and the damage they can inflict on companies and investor confidence in the securities markets. The number of outstanding fails, which stood at some 550 million shares in January 2007 and more than 1.1 billion shares in January 2008, jumped to over 2 billion shares by July 2008. The value of these fails jumped nearly as much, from \$12 billion in early 2007 to \$30 billion in July 2008.⁶

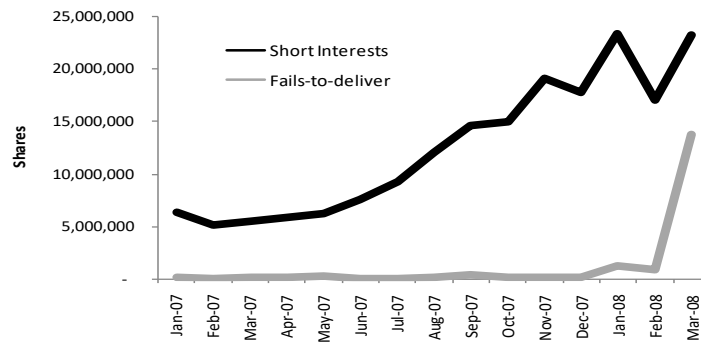
Figure 1: Fails-to-Deliver -- Dollar Amounts and Number of Shares, January 2007 – December 2008



There also is strong evidence that naked short sales played important roles in the pivotal failures of the crisis, starting with Bear Stearns. By the time of Bear Stearns’ collapse in March 2008, its short interest had soared four-fold, reaching more than 23 million shares, compared to average short interest of 5.5 million shares over the three-month period of the previous year (February-March-April 2007). Moreover, fails-to-deliver of the rising numbers of Bear Stearns shares sold short soared even more, from average levels of less than 100,000 shares in February-March-April of 2008 to 14 million shares in March 2008, an increase of 145 times. These data show clearly that Bear Stearns was a target of massive, naked short sales, and it is virtually certain that they helped precipitate its sudden and unmanaged collapse. (Figure 2, below)

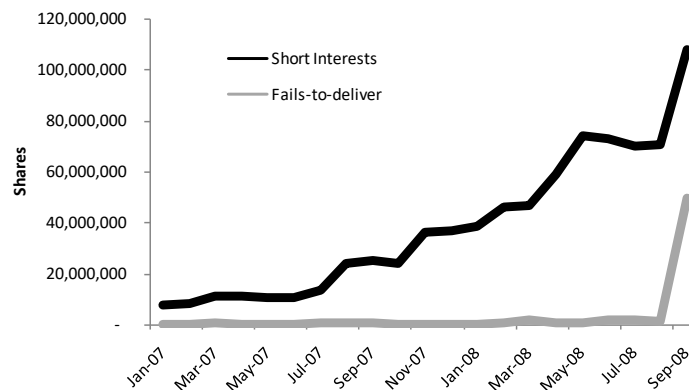
⁶ Unless noted, our monthly FTD figures in this report represent the sum of highest FTD per-company within that month.

Figure 2: Bear Stearns – Short Interests and Fails-to-Deliver, January 2007 – March 2008



Following Bear Stearns, the SEC took a number of additional steps to address the problem. On July 15, 2008, the Commission imposed a temporary pre-borrow requirement on short sales in 19 major financial firms, although three days later it exempted market makers and derivative positions. These restrictions did not prevent massive short sales and naked short sales of many companies, including Lehman Brothers which folded on September 15, followed by AIG on September 16. Rather, the sudden collapse of Lehman Brothers followed a pattern nearly identical to Bear Stearns. Moreover, this time, it triggered the systemic financial crisis that continues to exact enormous damage on the American economy, the value and operating capacity of thousands of companies, and the wealth and security of tens of millions of households. By September 15, 2008, when Lehman Brothers filed the largest Chapter 11 bankruptcy in the U.S. history, its short interest had risen to nearly 100 million shares, some four times its average short interest of 24 million shares in the corresponding quarter of the previous year (August-September-October 2007). Moreover, just like Bear Stearns, the incidence of fails-to-deliver of Lehman Brothers shares soared to an even much greater degree, increasing 150-fold from an average of 220,000 shares in August-September-October of 2007 to 50 million shares in September 2008. (Figure 3, below)

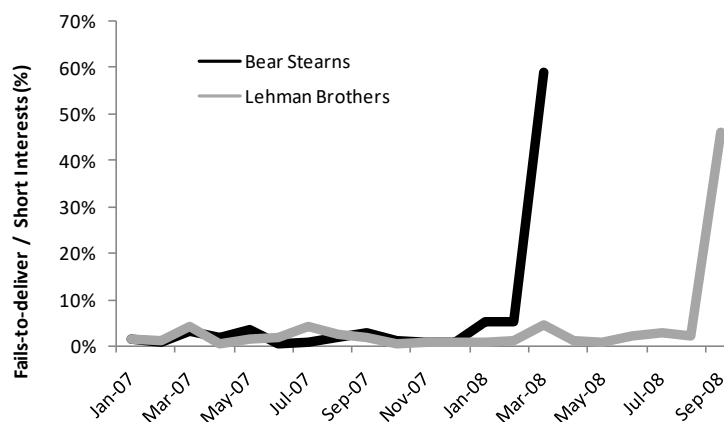
Figure 3: Lehman Brothers – Short Interests and Fails-to-deliver, January 2007 – September 2008



In both of these cases, the incidence of fails-to-deliver soared in the month prior to the companies' destructive collapses. Based on their share prices in the month before their collapse,

the value of their fails, most of which almost certainly arose from naked short sales, exceeded \$1 billion in each case.⁷ Moreover, the FTDs of Bear Stearns shares in March 2008 represented 59 percent of the company's total short interest, compared to an average of 1 percent in 2007. Similarly, the FTDs of Lehman Brothers shares in September 2008 represented 46 percent of the company's short interest, compared to an average of 2 percent in 2007. (Figure 4, below) While the crisis doubled legitimate short sales in these stocks, it appears to have produced an avalanche of abusive, naked short sales – increases of 14,500 percent to 15,000 percent, compared to the previous year averages.

Figure 4: Bear Stearns and Lehman Brothers, Fails-to-Deliver as a Share of Short Interest, January 2007 to September 2008



We conclude that massive, naked short sales precipitated the sudden failures of these firms and the catastrophic financial and economic damage triggered by their abrupt collapse. While both firms would likely have failed in any event, a strictly-enforced pre-borrow requirement could have prevented the massive, naked short sales and enabled their executives and federal officials to manage their restructurings or liquidations in an orderly way. Under those conditions, the collateral damage to the financial markets and the overall economy could have been much better contained.

The SEC recognized this pattern and on September 17, 2008, two days after Lehman Brothers' collapse, issued new rules imposing additional penalties on those who fail to deliver shares sold short and proposed new requirements that hedge funds and other large investors disclose their short trading positions. The Commission also adopted Rule 204T accelerating close-out requirements and expanding the scope of Reg SHO beyond threshold securities to cover all equities. Under the new rules, a broker dealer that fails to deliver shares in any transaction may not engage in additional short sales in that security without a pre-borrow or a clear and specific agreement to borrow the security. The new rules also temporarily removed the existing exception for option market makers.

⁷ Bear Stearns was traded at \$80 per-share in February 2008, one month before the collapse. Lehman Brothers shares were traded at \$20 per-share three-months before the collapse in September 2008 and in the range of \$40 per-share during the second quarter of 2008, following Bear Stearns' collapse.

Two days later, the SEC temporarily halted short sales of 799 financial stocks and directed money managers to report new short sales in certain other securities. In the United Kingdom, the Financial Services Authority (FSA) took similar measures, barring short sales in financial institutions and requiring public disclosure of all substantial net short positions in these companies. Within the week, Germany, Australia, Taiwan, Korea, and the Netherlands suspended short sales in either financial companies or all companies.

The SEC lifted the ban on short sales in financial stocks on October 6, 2008; over the next two weeks, the Commission permanently eliminated the options market maker exception from Reg SHO, enhanced delivery requirements for equity securities, and narrowed the definition of bona-fide market-making transactions exempt from delivery requirements. Despite these measures, SEC data show that FTDs two months later were still higher than during the first six months of 2007: In December 2008, FTDs averaged on any given day nearly 900 million shares, with a total value of more than \$8 billion. (Figure 1, above) Moreover, there is little basis for confidence that these measures would prevent a recurrence of the events of March and September 2008.

Next Steps for the SEC

The continuing persistence of FTDs and the prospect of additional problems in the future suggest that the SEC should reform the basic mechanism for short sales. The most effective and efficient mechanism for this purpose, in our view, would be to apply a strict pre-borrow requirement to all short sales of the kind implemented by financial authorities in some other countries and recently called for by five U.S. Senators.⁸

To examine the basis and implications of such a change, we analyze the incidence and effects of FTDs across the markets using SEC daily FTD data for 5,500 companies reporting 10,000 or more fails at some time during 2007 and 2008, supplemented with additional data on these companies from commercial sources. Our analyses find that short sales and FTDs are positively and strongly correlated, not only among large financial institutions but across the sectors of the economy, the major exchanges, and varying market capitalization and degrees of insider ownership. Our analysis further finds that short sales and overall trading volume are correlated only weakly and in limited areas of the market. The data also show that the recent high incidence of naked short sales and FTDs among financial companies occurred in other sectors as well. Based on these results, concerns about the impact of naked short sales the FTDs they produce apply to all sectors and markets, not just finance, as should reforms to sharply reduce their incidence and impact.

The analysis suggests further that a pre-borrow requirement could curb abusive naked short sales without impairing legitimate short sale activity or imposing any significant costs on the efficiency of U.S. equity markets. Legitimate short sellers would bear no additional costs: Their direct costs from a pre-borrow requirement – the cost of borrowing the shares – will be the same as the costs which they already bear under SEC regulation to carry out their short sales.

⁸ Letter to SEC Chair Mary L. Schapiro from Senators Saxby Chambliss, Johnny Isakson, Edward Kaufman, Carl Levin and Jon Tester, April 1, 2009. Senator Arlen Specter also signed the letter, but focused on restoration of the uptick rule.

Additional analysis and the record of other national markets with pre-borrow requirements also show that this reform would entail little if any reduction in the overall liquidity of the markets. Moreover, to the degree that the requirement reduces overall short sales by reducing naked short sales, the resulting liquidity would reflect more accurately the underlying economic conditions, enhancing the market's efficiency. As no one could reasonably hold that market efficiency should be enhanced by allowing investors to sell shares long without owning and delivering them, its efficiency is not supported by allowing investors to sell shares short without borrowing and delivering them. Especially in light of the damage which abusive naked short sales exact on individual companies, their shareholders and, under certain conditions, the financial system, a pre-borrow requirement applied to short sale transactions should produce significant net benefits for shareholders and the integrity of the U.S. market process.

III. The Benefits and Costs of Short Sales

The need for a pre-borrow requirement should not be taken to suggest that legitimate short sales damage or impair the operations of capital markets, or that short sales should be bound in ways other than those directly supporting the conditions which render them legitimate. Short sales vitally enhance public information flows about public companies and thereby contribute substantially to the efficient operations of financial markets. They promote price discovery by providing a way for market participants to profit from the knowledge or view that a company's share price is overvalued and the consequent expectation that its share price will decline. Without short selling, stock prices would be biased by the views of buyers because only investors who already own shares in a company could convey negative views about that company by selling their shares. As a result, stock prices would not fully incorporate the negative views of all market participants.

Short sellers accept larger risks than those who own a stock, for while the risk to an owner of holding his or her shares is capped at the original purchase price, the risk for a short seller can be much greater if the stock goes up sharply. The value of the information conveyed through a short sale depends upon this economic risk which the short seller bears. Prudent traders short companies with poor fundamentals, such as book to value or earnings growth, or the expectation of poor earnings or company turmoil.⁹ Market observers assume that most short sellers are at least as prudent as other investors – or even more so, given their greater risk – and therefore often use a stock's short interest to gauge a company's potential downside. A sudden and substantial increase in the volume of a stock's short sales, therefore, can be a powerful red flag for other market participants; and equity analysts often downgrade companies with high and unexpected levels of short sale activity. While the shares of most troubled companies would decline eventually without short sellers, their activities can uncover those troubles sooner, reducing the likelihood of companies remaining overpriced for sustained periods.¹⁰

Academic research supports these general views. While an early study concluded that short sales produce an upward bias in stock prices (Miller, 1977), subsequent analyses rebutted these findings (for example, Diamond and Verrecchia, 1987). Researchers also established that

⁹ Dechow, Patricia, Hutton, Amy, Meulbroek, Lisa and Sloan, Richard, "Short-Sellers, Fundamental Analysis, and Stock Returns," *Journal of Financial Economics*, 2000.

¹⁰ Culp, Christopher and Heaton, J.B., "The Economics of Naked Short Selling," *Regulation Magazine*, 2008.

high and unexpected short interest results in downward revisions in forecasts, compared to firms with lower short interest (Francis *et. al.*, 2005); and that firms whose ratings are downgraded following high short sale activity also experience declines in operating income.¹¹ Moreover, very recent studies have not found any strong evidence that the 2008 restrictions on short sales in various countries altered stock returns in major global markets (Marsh and Neimer, 2008).¹²

Just as do long sales and purchases, legitimate short sales represent a contract in which a buyer pays a seller, and the seller delivers the shares which the buyer has purchased, but by borrowing them. Without borrowing and delivering the shares, the contract is fraudulent and thereby diminishes the market's efficiency. The requirement to borrow shares which a seller has sold short also sustains the integrity of a company's capitalization, by requiring that short sale transactions involve the actual exchange of shares registered with the SEC.

Naked short sales violate all of these terms. A buyer pays a seller but the seller fails to borrow and deliver the shares the buyer has paid for. This illegitimate transaction distorts the meaning of the company's capitalization since no shares registered with the SEC are exchanged in the transaction. Some fails-to-deliver represent human or mechanical errors or processing delays of paper certificates. However, the use of electronic shares and notations for 97 percent of all trades and the operations of the continuous net settlement system ensure that these inadvertent FTDs represent only a very minor share of all fails. Research and logic both establish that large-scale sustained fails are both intentional and carried out for illegitimate reasons, either to avoid the borrowing costs that other short sellers bear, or to advance an effort to manipulate a stock's price. In the first case, the naked short seller unilaterally claims an economic advantage over investors who respect SEC and exchange rules. In the second instance, naked short sellers may flood the market for a company's shares with sell orders, and in examples such as Bear Stearns, Lehman Brothers and many less infamous cases, artificially drive down the value of a company's shares, harming its shareholders.¹³ In both cases, the SEC has noted that the naked short sellers' ability to avoid borrowing costs grants them greater leverage than legitimate short sellers, and they can use this enhanced leverage to engage in larger trading that can result in the manipulation of share prices.¹⁴

For these reasons, the SEC has repeatedly denounced the practice of naked short sales. In 2006, long before the large-scale naked short sales of pivotal financial institutions in 2008, the Commission wrote that "large and persistent fails to deliver" can be "indicative of manipulative naked short selling, which could be used as a tool to drive down a company's stock price" and "the perception of such manipulative conduct also may undermine the confidence of investors. These investors, in turn, may be reluctant to commit capital to an issuer they believe to be subject to such manipulative conduct."

¹¹ Francis, Jennifer, Venkatachalam, Mohan and Zhang, Yun, "Do Short Sellers Convey Information About Changes in Fundamentals or Risk?" 2005.

¹² Marsh, Ian W. and Niemer, Norman, "The Impact of Short Sales Restrictions," 2008 provides a comprehensive literature review.

¹³ Amendments to Regulation SHO, Release No. 34-58773, Securities and Exchange Commission, October 17, 2008.

¹⁴ Security and Exchange Commission, "Short Sales, Proposed Rule," Release No. 34-48709, October 29, 2003.

In this last comment, the SEC notes correctly that naked short sales, far from enhancing market liquidity, can actually reduce it. This contrasts with the contribution of legitimate short sales to the market's overall efficiency by expanding the number of investors willing to sell shares at any moment. When a market experiences significant and temporary buying pressures, short sellers often respond, with an expectation that as the buying pressures subside, share prices will revert to their fundamental values, and the short sellers will be able to purchase the shares to cover their positions at lower prices.¹⁵ The high incidence of short sales in U.S. markets in recent years attests to their significance: A survey of all sales on the New York Stock Exchange (NYSE) during the first quarter of 2007, for example, found that about 25 percent of all shares traded were sold short. Unsurprisingly, a recent study found that the emergency ban on short sales of 19 major financial institutions increased their price volatility (Bris, 2008).¹⁶ These results are amplified by other researchers who found decreased trading volume and fewer trades during the 17 trading days of the short-sale ban, compared to the 17 trading days prior to the temporary ban – and not only for the 19 targeted companies, but for all stocks (Boulton and Braga-Alves, 2008).¹⁷

IV. The Impact of a Pre-Borrow Requirement: Empirical Evidence and Analysis

To evaluate the impact of a pre-borrow requirement on short sales and market liquidity, we assembled a database using daily fails-to-deliver data collected by the National Securities Clearing Corporation's (NSCC) Continuous Net Settlement (CNS) and reported by the SEC, from January 2007 to December 2008. A stock's number of fails on any given day, T, represents the cumulative fails in that stock outstanding until T, plus new fails that occur on T, less old fails that settle on T. To use these SEC daily FTD data along with short interest data reported on a monthly basis, we use the high fails reported each month for each company to represent its fails in that month. These data, however, underestimate both the number of companies with fails and the total FTDs in the market, because the CNS reporting system includes only companies with at least 10,000 FTDs on any given day. Moreover, these data also do not include ex-clearing trades which occur outside the CNS reporting system, with attendant FTDs, which may be very substantial. With these caveats, the NSCC data show approximately 5,500 companies with at least 10,000 FTDs at some point over those two years. We use this list of 5,500 companies with their fails and data collected on each company identifying its primary sector, its listed exchange, its short interest, its outstanding shares, its trading volume and market capitalization, and the extent of its insider ownership.

This database shows that fails-to-deliver are a very broad-based phenomenon and problem. The data show, first, that significant FTDs are distributed across every economic sector. The 5,500 companies were distributed as follows: 10.3 percent in basic materials; 0.3 percent in conglomerates; 7.4 percent in consumer goods; 26.3 percent in financial sector; 11.7 percent in healthcare; 6.1 percent in industrial goods; 17.3 percent in services; 18.8 percent in

¹⁵ Diether, Karl, Lee, Kuan-Hui Lee and Werner, Ingrid, "Short Sale Strategies and Return Predictability," *The Review of Financial Studies*, 2007.

¹⁶ Bris, Arturo, "Short Selling Activity in Financial Stocks and the SEC July 15th Emergency Order," Working Paper, 2008.

¹⁷ Boulton, Thomas J. and Braga-Alves, Marcus V., "The Skinny on the 2008 Naked Short Sale Restrictions," Working Paper, December 2008.

technology; and 2.0 percent in utilities. The database also shows that more than half of all companies with substantial FTDs over the two-year period were listed on the major exchanges: 28.0 percent were listed on NYSE/AMEX, 25.4 percent were listed on Nasdaq; and 46.6 percent were traded over-the-counter.¹⁸

We also disaggregated the 5,500 companies by the size of their market capitalization, using four categories: Large cap (more than \$5 billion); medium cap (\$1 billion-\$5 billion); small cap (\$300 million-\$1 billion); and micro cap (less than \$300 million). As we will see, these data show that companies of all sizes experience substantial FTDs, but large-scale fails are fairly concentrated in very small companies. Micro cap companies accounted for 62 percent of the 5,500 companies, compared to 9 percent for the large caps, 13.3 percent for the medium caps, and 15.7 percent for the small caps. This finding is particularly troubling, because micro cap companies are more easily subject to share manipulation through naked short sales than larger companies.

We also divided the companies in the database according to whether insiders held relatively large or relatively small shares of the company's stock. In April 2008, insiders held an average of 22.5 percent of the shares of U.S. companies. Using this measure, we divided the 5,500 companies into those with 22.5 percent or more insider ownership, and those with less than 22.5 percent insider ownership. Of the 5,500 companies with substantial FTDs, 38.7 percent had higher than average insider ownership, and 61.3 percent had less than average insider ownership.

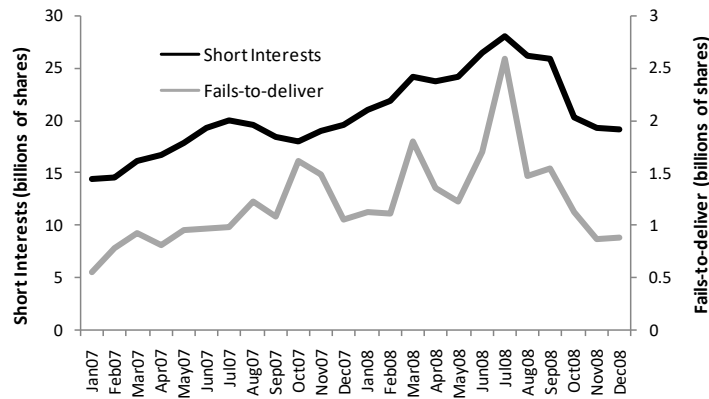
The Relationship of Short Interest and Fails-to-Deliver

The SEC Office of Economic Analysis (OEA) has found a strong correlation between trading volume and fails.¹⁹ These results are important, but they do not bear directly on the issues examined here. One claim sometimes made by opponents of additional regulation is that fails are tied closely to overall short sales, and therefore attempts to end fails may also reduce overall short selling, impairing liquidity. There is no evidence that the results found by the OEA suggest that restrictions on fails would impair overall trading volume and therefore market liquidity. Rather, the data show that since short sellers are not currently required to pre-borrow the shares they sell short, higher short selling activity is accompanied by even greater increases in fails-to-deliver – and vice versa. From January 2007 to July 2008, short interest nearly doubled from 14.5 billion shares to 28 billion shares, while FTDs increased much more sharply, rising five-fold from 500 million shares in January 2007 to 2.5 billion shares in July 2008. Following the SEC restrictions on short sales, beginning in July 2008, short interest declined 30 percent from its July peak of 28 billion shares to about 20 billion shares in December 2008. Over this period, fails fell more rapidly, declining by two-thirds from a peak of 2.6 billion shares in July 2008 to less than 900 million shares in December 2008. (Figure 5, below)

¹⁸ NYMEX figures include AMEX trading activities, which accounted for 4.7 percent of the total figures.

¹⁹ SEC, Office of Economic Analysis.

Figure 5: Short Interest and Fails-to-Deliver, 2007-2008 (billions of shares)



We use the SEC data on fails in 2007-2008 to perform a regression analysis to explore the relationship between the volume of short sales and the numbers of fails. The major exchanges report short positions on a bi-weekly basis, and we use those reports as a proxy for short sale activity. These data, therefore, understate short sale activity, because they do not include short positions opened and closed out during the two-week intervals between the bi-weekly reports. The SEC data also understate fails-to-deliver, since the data do not include fails in companies with less than 10,000 total fails.

Our regression specification to test the relationship between short sales and fails-to-deliver is as follows:

$$\% \Delta (\text{Fails-to-Deliver}) = \alpha + \beta \% \Delta (\text{Short Interest}),$$

where (% Δ) is the percentage change, Fails-to-Deliver is the highest monthly fails for each company, and Short Interest is the number of outstanding shares sold short for each company at the end of each month.

As expected, the coefficient, β , for the aggregate data is positive and statistically significant at a 99 percent level of confidence: short sales and fails are positively correlated.

We also performed the same regression specification for each of the nine economic sectors, the two listed exchanges and OTC markets, the companies disaggregated by four market cap sizes, and by high and low insider ownership. For four sectors, the regression analysis found a positive relationship (coefficient β) with statistical significance: Consumer goods; finance; healthcare; and industrial goods. This result suggests that the concerns about large-scale fails accompanying high levels of short sales in finance, which prompted stringent new steps, also are applicable to other economic sectors. The analysis found positive coefficients for this relationship in the five other sectors, but not at a statistically-significant level.

Opponents of additional regulation of short sales sometimes claim that the naked short sales associated with manipulation predominantly occur in inefficient and often illiquid markets such as the OTC Bulletin Board and Pink Sheets, with less stringent disclosure requirements and

regulations, and primarily affect firms with small floats that create a scarcity of shares to borrow.²⁰ Our regression analysis found that these views are incorrect: The estimated coefficients for the link between the volumes of short sales and FTDs are positive and statistically significant for companies listed on the NYSE and Nasdaq – while the coefficient was negative and statistically insignificant for companies in the database that were traded OTC. However, the regression found a positive and statistically-significant relationship between short interest and FTDs for companies with higher than average insider-ownership. These findings are summarized in the following table, below.

Table 1: Estimated Coefficients for Short Interest and Fails-to-Deliver, 5,500 Stocks with Substantial Fails, Signs and Statistical Significance, 2007-2008

	Sign	Statistical Significance
<i>All Companies</i>	+	***
Basic Materials	+	
Conglomerates	+	
Consumer Goods	+	***
Financial	+	***
Healthcare	+	*
Industrial Goods	+	***
Services	+	
Technology	+	
Utilities	+	
<i>Exchange:</i>		
Nasdaq	+	***
NYSE	+	***
OTC	-	
<i>Market Capitalization</i>		
Large (>\$ 5 billion)	+	**
Medium (\$1 billion - \$5 billion)	+	***
Small (\$300 million - \$1 billion)	+	***
Micro (< \$300 million)	+	*
<i>Insider Ownership</i>		
High (<= 22.5 percent)	+	***
Low (>22.5 percent)	+	

Key: *** 99% confidence; ** 95% confidence; * 90% confidence

These findings show, as expected, that higher short selling activity is accompanied by higher fails. It also shows that this relationship holds well beyond the financial companies targeted for short sale restriction during the recent crisis, extending to at least three other sectors. It refutes the view that this relationship is especially strong for micro-cap companies traded OTC. In fact, the analysis found that the relationship held for companies listed on the NYSE and Nasdaq, but *not* for those traded OTC, and that a more statistically significant relationship between short sales and fails holds for large, medium and small-cap companies than for micro-

²⁰ Aggarwal, Rajesh and Guojun Wu, “Stock Market Manipulations,” Journal of Business, 2006.

caps. As expected, the analysis did find a strong positive correlation between short sales and fails among companies with higher than average insider ownership.

Based on these results, new requirements to eliminate FTDs, including pre-borrow requirements, should apply to companies in all sectors, of all sizes, and traded on all exchanges.

The Relationship of Short Interest and Trading Volume

We also use this database to analyze the relationship between short sales and trading volume, to examine the impact of short sales on market liquidity. Despite the assumptions of many observers and OEA's findings of a correlation between trading volume and fails, recent data on short interest and trading volume suggest that this relationship may be problematic. In July 2008, the SEC first temporarily barred short sales of 19 financial companies without a pre-borrow and then suspended all short sales in 799 financial companies, short interest declined by an average 6 percent per-month and FTDs fell an average 10 percent per-month. Despite these declines, trading in financial companies over the same period increased an average 5 percent per-month.

We extend this analysis using the short interest and trading volume for the 5,500 companies with substantial fails over the period, January 2007 – December 2008, a more comprehensive examination than other recent studies focused on shorter periods and more limited sets of companies. We use the database to conduct regression analyses testing the hypothesis that short sales provide significant market liquidity. As before, we use the short interest reported by the major exchanges on a bi-weekly basis as a proxy for short selling activity. A positive (negative) difference in short interest from one month to the next indicates that short sellers sold (purchased) shares in the second month to increase (reduce) their short positions. Thus, both positive and negative differences in short interest indicate trading activities. Taking account only of "positive" difference in short interest would bias this analysis of trading volume. If short selling increases liquidity, therefore, the absolute value of the change in short interest should be positive and statistically significant, relative to trading volume. As we will show, the results do not support the assumption that short sales are a critical aspect of market liquidity.

Our first regression specification to test the relationship between short sales and trading volume for all 5,500 companies is as follows:

$$\Delta (\text{Trading Volume}) = \alpha + \beta |\Delta (\text{Short Interest})|,$$

where (Δ) is the difference between two time periods, Trading Volume is each stock's monthly trading volume, Short Interest is a stock's outstanding short sales reported bi-weekly, and ($| \cdot |$) is the absolute value.

The results show a positive correlation between overall short interest and overall trading volume, but at a very weak level of statistical significance (the result was significant only with 90 percent confidence). To test whether the results would be stronger and more reliable for subsets of the database, we performed regressions for the nine economic sectors. Again, the

results do not support the view that short sales are critical for market liquidity. Only one sector, consumer goods, showed a positive relationship with strong statistical significance; one other sector, basic materials, showed a positive relationship with weak statistical significance. Of the other sectors, six showed a positive relationship that was not statistically significant; and one sector, technology, reported a negative correlation that also was not statistically significant.

We performed the same regressions on the dataset disaggregated by exchanges, with comparable results. The beta coefficients were positive for the NYSE database companies and negative for the OTC database companies, and neither result was statistically significant. The Nasdaq database companies reported a positive relationship, but again at only a weak level of statistical significance. Similarly, there were negative and not statistically significant correlations between short interest and trading volume for small-cap and micro-cap companies – the opposite of what some observers might have expected – and positive correlations for medium and large cap companies, with weak statistical significance. Finally, there were no statistically significant correlations reported for the database companies based on high and low levels of insider ownership. The results, summarized in Table 2, below, suggest that short sales do not have a significant effect on market liquidity: Other factors drive liquidity.

Table 2: Estimated Coefficients for Short Interest and Trading Volume, 5,500 Stocks with Substantial Fails, Signs and Statistical Significance, 2007-2008

	Sign	Statistical Significance
<i>All Companies</i>	+	
Basic Materials	+	*
Conglomerates	+	
Consumer Goods	+	***
Financial	+	
Healthcare	+	
Industrial Goods	+	
Services	+	
Technology	-	
Utilities	+	
<i>Exchanges:</i>		
Nasdaq	+	*
NYSE	+	
OTC	-	
<i>Market Capitalization</i>		
Large (>\$ 5 billion)	+	*
Medium (\$1 billion - \$5 billion)	+	*
Small (\$300 million - \$1 billion)	-	
Micro (< \$300 million)	-	
<i>Insider Ownership</i>		
High (> = 22.5 percent)	+	
Low (< 22.5 percent)	+	

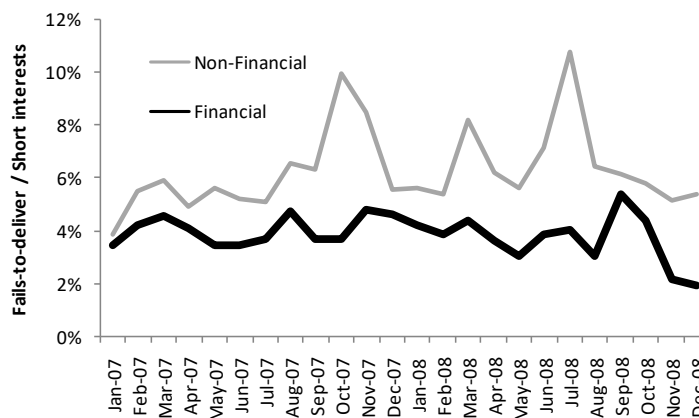
Key: *** 99% confidence; ** 95% confidence; * 90% confidence

Incidence of Potential Short Sale Abuse across Sectors, Exchanges, Market Caps and Insider Ownership

As noted earlier, on July 15, 2008, the SEC issued a temporary emergency rule applying a pre-borrow requirement to short sales in 19 large, financial firms; and two months later, on September 19, 2008, the Commission issued another emergency order briefly halting short sales in 799 financial institutions.²¹ The SEC also noted that it was considering measures to address short sales abuses in non-financial companies.²² We use our database to gauge whether short sale abuse applies particularly to financial companies, by comparing patterns of short interest and fails-to-deliver shares across the nine major economic sectors during 2007 and 2008.

This analysis found that companies in non-financial sectors have been *more* vulnerable to these pressures than financial companies, measured by their FTDs as a share of their short interest. The data show that over 2007 and 2008, monthly fails-to-deliver represented 4 percent to 11 percent of short interest across non-financial sectors, compared to 2 percent to 4 percent in the financial sector. The share of short sales that fail in non-financial companies is also much more volatile than in the financial sector. (Figure 6, below)

Figure 6: Fails-to-Deliver as a Percentage of Short Interest, 5,500 Financial and Non-Financial Stocks with Substantial Fails, January 2007 – December 2008



We also compared fails as a share of short sales based on companies’ listing with the NYSE, Nasdaq, and OTC.²³ The NYSE and Nasdaq show a similar pattern of fails accounting for about 4 percent of the short interest of threshold companies through 2007 and 2008. By

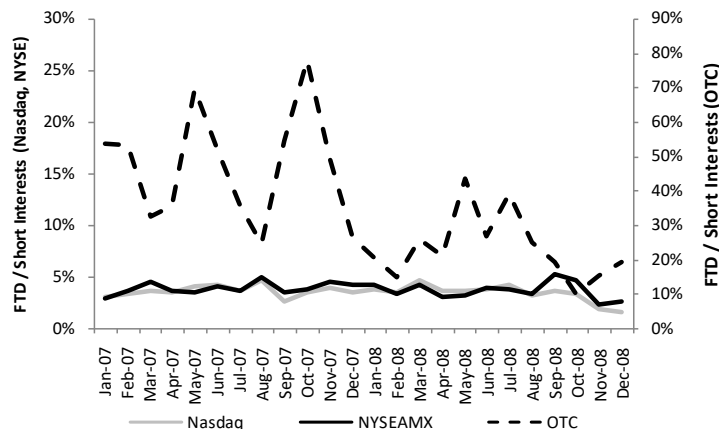
²¹ Emergency Order Pursuant to Section 12(k)(2) of the Securities Exchange Act of 1934 Taking Temporary Action to Respond to Market Developments, Release Number 34-58166, <http://www.sec.gov/rules/other/2008/34-58166.pdf>; Emergency Order Pursuant to Section 12(k)(2) of the Securities Exchange Act of 1934 Taking Temporary Action to Respond to Market Developments, Release Number 34-58592, <http://www.sec.gov/rules/other/2008/34-58592.pdf>.

²² “S.E.C. Temporarily Blocks Short Sales of Financial Stocks,” *New York Times*, September 19, 2008, <http://www.nytimes.com/2008/09/20/business/20sec.html?pagewanted=1&n=Top/Reference/Times%20Topics/Subj%20ects/S/Short%20Selling&r=1>.

²³ NYSE figures include AMEX; OTC figures include both OTC-Bulletin Board and Pink Sheet stocks.

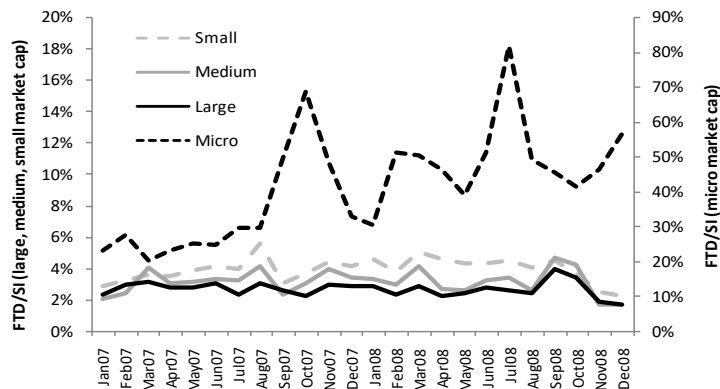
contrast, fails as a share of short interest for these OTC companies averaged about 35 percent (Figure 7, below): While fails are not particularly concentrated in OTC companies, their incidence as a share of short interest is concentrated. This suggests that while all public firms are vulnerable to short sale abuses, OTC firms experience it to a greater degree. However, the extraordinary levels of fails, as a share of short interest, seen before the collapse of Bear Stearns and Lehman Brothers demonstrate that short sale abuse can damage large-cap NYSE companies.

**Figure 7: Fails-to-Deliver as a Percentage of Short Interest
5,500 Stocks with Substantial Fails, By Exchanges, January 2007 – December 2008**



We also examined fails as a share of short interest for database companies based on market capitalization. The results parallel those found for the exchanges. Large cap companies, medium cap companies, and small cap companies all recorded fails equal to about 2 percent to 5 percent of their short interest.²⁴ The micro-cap database companies (less than \$300 million), however, experienced much higher and more volatile FTDs as a share of their short interest, doubling from an average of 24 percent in the first quarter of 2007 to 48 percent by the fourth quarter of 2008, and peaking as high as 82 percent in July 2008. (Figure 8, below)

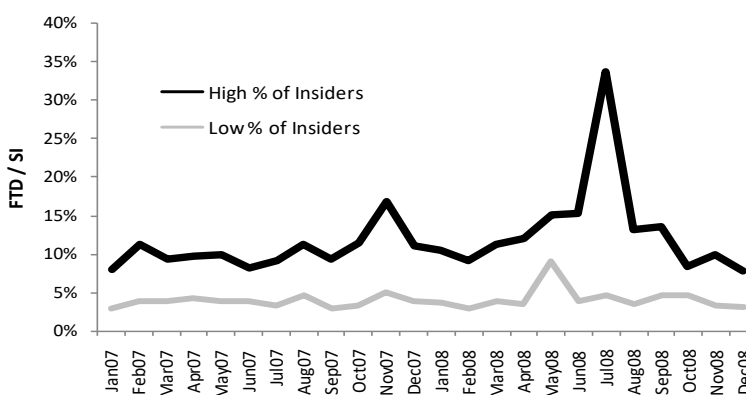
**Figure 8: Fails-to-Deliver as a Percentage of Short Interest, 5,500 Stocks,
By Market Capitalization, January 2007 – December 2008**



²⁴ Market capitalizations of companies are based on April 2008 figures.

Finally, we evaluated FTDs as a share of short interest for the 5,500 stocks with substantial fails, based on whether they have relatively high or low insider ownership, relative to the average insider ownership of 22.5 percent. Since companies with high percentages of insider ownership have relatively fewer shares available for the trading, we should expect relatively higher FTDs in those companies: During 2007, the FTDs as a share of short interest averaged 10 percent among the high insider-ownership companies, compared to 4 percent in the low insider-ownership firms. These percentages increased during the financial and economic crisis of 2008, reaching 34 percent in July 2008 among the high insider-ownership group, and 9 percent in May 2008 for the low insider-ownership companies. (Figure 9, below)

Figure 9: Fails-to-Deliver as a Percentage of Short Interest, 5,500 Stocks, By Insider Ownership, January 2007 – December 2008



Overall, these statistical analyses of 5,500 companies with substantial fails during 2007 and 2008 found that the patterns of short sales and fails which have raised serious concerns in the financial sector are apparent across other sectors, all exchanges, and market caps. Measures contemplated or taken to protect financial companies and the integrity of their short sales should apply to all companies or, at a minimum, to all stocks with a record of substantial fails.

V. Ending Fails-to-Deliver through Pre-Borrow Regulation

In our view, a pre-borrow requirement for short sales offers an effective and efficient way for the SEC to address these concerns and to end naked short sales and the distortions and manipulation they can cause. One reason for this confidence is that pre-borrow requirements have been applied successfully in other markets. For example, following the 1997-1998 Asian financial crisis, Hong Kong instituted new regulations for short sales transacted through the Hang Seng Stock Exchange (HSI). Under these rules, Hong Kong's Securities and Futures Ordinance (SFO) designates stocks approved for short sales and requires investors at the time that a short sale order is placed to confirm that they already have secured the shares to deliver. Under these rules, Hong Kong avoided the spikes in short sales seen during the current crisis in the United States and other global markets, including the massive naked short sales that helped overwhelm Bear Stearns and Lehman Brothers. From September 22, 2008 to October 22, 2008, for example, while short sales and associated fails-to-deliver rose sharply in U.S. markets, the daily turnover of short sales on the HSI averaged HK \$4.8 billion, or 7.6 percent of total market

activity, compared to a daily average of HK \$5.4 billion and 8.5 percent of total market turnover for the third quarter up to September 19, 2009 and a daily average of HK \$5.7 billion and 7.4 percent of market activity over the second quarter.²⁵

Hong Kong's strict regulation of short sales has no apparent adverse effects on the liquidity of its markets. From 1998 to December 2008, the average number of shares traded per-day jumped 172-fold, from 637,661,751 shares to 109,970,391,523 shares. Similarly, the average daily value of sales on the Hong Kong exchange has risen over this period 111-fold, from HK \$637,982,495 to HK \$71,839,648,436. This enormous growth in turnover and liquidity is apparent derivatives as well as equities: The number of options and futures contracts traded on the Hong Kong markets increased 444-fold, from 235,976 in 1998 to 105,006,736 in 2008.

A pre-borrow requirement also should not impair the market benefits and efficiencies provided by short sales. A pre-borrow would not impede the price discovery and correction provided by short sellers, because it would not increase the costs to short sellers, who are already obliged to borrow the shares they sell. Further, electronic record keeping should enable broker-dealers to locate and borrow shares very quickly. Any additional delay of seconds or even minutes would be substantially less than the time required to transact all trades less than decade ago; and the creation of a new market for millions of pre-borrows should stimulate the development of new arrangements and technologies to eliminate any additional delay.

The "cost" of a pre-borrow requirement would come through the loss of short sales which can or would occur only as naked transactions – that is, without borrowing and delivering the shares sold. Such cases would include short sales in which the borrowing costs could render the transaction uneconomic in the short seller's view – the "strategic" fails noted several years ago in a seminal analysis by SEC visiting economist Leslie Boni.²⁶ It also would include short sales in which the shares to borrow are unavailable, most prominently manipulative efforts to swamp the market of a stock with sell orders and drive down its price as seen in many death-spiral financings, the recent Lehman Brothers and Bear Stearns cases, and other less, well-documented cases. None of these forms of short sales enhance the efficiency or liquidity of the market. Rather, they violate the basic terms of economic contract to deliver what one has been paid for, as well as the rules which legitimate short sellers follow routinely.

Far from imposing costs on the markets, a pre-borrow requirement that eliminates "strategic" and abusive naked short sales would confer significant benefits. In a time of financial crisis, it should preclude the massive levels of naked short sales that contributed to the abrupt, unmanaged and unnecessarily disruptive collapses of Bear Stearns and Lehman Brothers. In other periods, it would improve the quality of the information provided through short sales, since only those willing to borrow shares could sell short, and reduce the risks of stock-price manipulation. Again, there is no evidence that the requirement would impair market liquidity in any meaningful way. Hong Kong's pre-borrow requirements, along with other restrictions on short sales which U.S. authorities are not considering, have not impaired the extraordinary expansion in liquidity in its markets. Moreover, regression analysis of the 5,500 firms with

²⁵ Securities and Futures Commission, "Short Selling in the Hong Kong Stock Market," Research Paper No. 42, 2008.

²⁶ Leslie Boni, "Strategic Delivery Failures in U.S. Equity Markets," November 13, 2004.

substantial fails did not find any significant relationship between trading volume and short sales: Factors other than short sales -- such as the availability of capital, the performance and volatility of our markets, the stability of the dollar, the economy's underlying fundamentals, and more -- determine the liquidity of our markets.

Interest in pre-borrow requirements and other changes in short sale arrangements has increased substantially in recent months. In the third quarter of 2008, regulators introduced a range of short-sale restrictions or new regulations in many countries, including Australia, Belgium, Canada, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Russia, Singapore, Spain, Switzerland, Taiwan and the United Kingdom, as well as the United States. The early analysis of the impact of these various changes suggests that they have curbed certain risks without affecting share prices. Two scholars, Ian Marsh and Norman Niemer, analyzed stock return data from 17 countries during 2008 to assess the impact of short sale restrictions, by comparing in each country companies subject to the new restrictions with those not subject to the changes, in the periods before, during and after the restrictions.²⁷ They found no strong evidence that the restrictions on short selling affected the performance of the restricted stocks compared to those not restricted, across countries. Here, too, the results indicate how economy-wide, sector-wide, and company-specific factors -- not the regulation of short sales -- drive share price changes.

A new study of the new short sale restrictions applied by the Australian Securities Exchange (ASX) also supports our regression results. The Australians evaluated the impact of naked short sales on share price volatility and returns by applying new rules barring naked short sales in some securities and permitting the practice for other stocks. The study concludes that naked short sales increase the volatility of stock returns without producing more efficient prices. It also points to evidence that naked short sales can impair liquidity by increasing bid-ask spreads, reducing order-depth, and even reducing trading volume.²⁸

A liquid market is one in which large volumes of securities can be sold and purchased immediately at or very near the current market price,²⁹ and economists measure this liquidity in a number of ways. The most common proxies for liquidity are bid-ask spreads, the difference between the offers to sell and buy a stock: The more narrow the spread, the more liquid the market for the stock. Other measures of market liquidity include market depth, which refers to the demand for a stock (or volume of potential trades) at a prevailing market price. Market depth is typically measured by the volume of orders on the books at any time, with higher trading volumes at a prevailing price indicating liquidity, and by fluctuations in bid-ask spreads. Liquidity is also often linked to measures of "resiliency," or how quickly a stock's price recovers from a shock. Additional measures seen in the literature on market liquidity include price volatility, the number and volume of trades, trade frequency, and turnover ratio.³⁰

²⁷ Marsh, Ian W., and Niemer Norman, "The Impact of Short Sales Restrictions," Working Paper, 2008.

²⁸ Lecce, Steven, Lepone, Andrew and Segara, Reuben, "The Impact of Naked Short-sales on Returns, Volatility and Liquidity: Evidence from the Australian Securities Exchange," Working Paper, 2008.

²⁹ Kyle, Albert S., "Continuous Auctions and Insider Trading," *Econometrica*, 1985.

³⁰ Wong, Jim and Fung, Laurence, "Liquidity of the Hong Kong Stock Market since the Asian Financial Crisis," Working Paper, Market Research Division, Research Department Hong Kong Monetary Authority, 2002.

Other studies using these measures also point to a conclusion that new regulation of short sales, including a pre-borrow requirement, need not impair market liquidity. The finance expert Arturo Bris (2008) compared restricted and non-restricted U.S. stocks over the period of July 1, 2006 to August 8, 2008, examining their returns, firm fundamentals, measures of market quality, and pricing efficiency. The restricted stocks in the study included the 19 financial companies covered by the SEC emergency, pre-borrow order in July 2008. The study found that the 19 restricted stocks and other non-restricted stocks all experienced increased bid-ask spreads and a reduction in the intra-day volatility of their returns, suggesting deterioration in market liquidity.³¹ Since the results covered stocks subject to new short sale restrictions and those not subject to them, the results suggest that the liquidity effects arose from factors other than those restrictions. Similarly, Professors Thomas Boulton and Marcus Braga-Alves examined the impact of the pre-borrow requirement for the 19 financial companies.³² While they found that their bid-ask spreads widened during the restricted period, compared to a previous period, they also found that other, non-restricted stocks experienced similar, increased spreads during the same period.³³

Beyond these studies, the view that short sale regulation need not impair market liquidity is strongly supported, again, by the large liquidity gains achieved by the Hong Kong market, a market which for more than a decade has had not only a pre-borrow requirement and an uptick rule, but a short-sale disclosure regime that includes full audit trails and twice daily releases of data on short sale turnover. During the most volatile times following the collapse of Bear Stearns in March 2008 and Lehman Brothers in September 2008, short sale turnover on the Hong Kong market remained stable and comparable to pre-crisis levels, and overall market volatility was significantly less severe than in the U.S. and U.K. markets.³⁴

Some studies have found evidence of adverse effects associated with new regulations of short sales. However, these effects range from marginal to insignificant; and the same studies do not measure the benefits of those regulations, which could well be very substantial. As documented earlier, fails in the U.S. increased five-fold from January 2007 to July 2008, when they peaked at more than 2 billion shares; and they remained at levels of nearly 900 million shares at the end of 2008. A permanent pre-borrow requirement should prevent the large-scale naked short sales which account for most fails, of the kind that helped trigger the unmanaged collapse of Bear Stearns and Lehman Brothers as well as the manipulation of share prices for many other companies. Further, as the SEC has noted, ending naked short sales also would prevent unnecessary damage to public and international confidence in U.S. equity markets. Other benefits associated with eliminating fails-to-deliver through a strictly-enforced pre-borrow

³¹ Bris, Arturo, "Short Selling Activity in Financial Stocks and the SEC July 15th Emergency Order," Working Paper, 2008.

³² Boulton, Thomas J. and Braga-Alves, Marcus V., "The Skinny on the 2008 Naked Short Sale Restrictions," Working Paper, 2008.

³³ These conclusions must still be considered tentative, because all of the recent studies have data limitations. In the U.S., self-regulatory organizations (SROs) did not have to make short sale data available until January 2005 (New York Stock Exchange, http://www.nysearca.com/traders/regsho_sh.asp). The studies of the impact of short sale restrictions during the 2008 financial crisis also depend on limited data. For example, Boulton study is based on information for 51 trading days. While the Bris study covers more than two years, the results are sensitive to the inclusion or exclusion of small numbers of days in the sample, as noted in the Marsch and Niemer study.

³⁴ Securities and Futures Commission, "Short Selling in the Hong Kong Stock Market," Research Paper No. 42, SFC, 2008.

requirement could include ending much of the current, reported over-counting in corporate proxies and savings from averting future litigation over manipulation and other distortions linked to fails-to-deliver.

In recent years, the SEC has brought a small number of enforcement actions based on abusive naked short selling. The Commission also reports having received some 5,000 complaints pertaining the naked short sales over a recent, 17-month period. The Office of the Inspector General found that only 123 of those 5,000 complaints were forwarded to the enforcement division for further investigation, suggesting that the SEC has lacked the resources necessary to police naked short sales under its current rules.³⁵ A pre-borrow regime for short sales would help end the conditions which led to most of those complaints. It also would create a bright-line rule, simplifying enforcement and enabling the Commission to better target its resources.

The current financial and economic crisis has produced unusually disruptive conditions in U.S. capital markets, increasing the potential incidence and damage from naked short sales and failures-to-deliver. These conditions create a special urgency for new arrangements to finally and effectively curb these distorting and destructive practices. However, these practices have involved significant damage for investors and market confidence for many years. Since 2004, the SEC has applied a series of new regulations to curb these abuses, with only modest success. We conclude that a pre-borrow requirement would be the most effective and efficient approach to finally ensure the integrity of the short sale process and provide greater stability for markets during both normal periods and times of unusual economic stress.

³⁵ Securities and Exchange Commission, “Practices Related to Naked Short Selling Complaints and Referrals,” Office of Inspector General, Office of Audits, SEC, 2009.

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About the Authors

Robert J. Shapiro is the chairman of Sonecon, LLC, a private firm that advises U.S. and foreign businesses, governments and non-profit organizations on market conditions and economic policy. He is a Senior Fellow of the Georgetown University School of Business, director of the NDN Globalization Initiative, chair of the U.S. Climate Task Force, co-chair of the America Task Force Argentina, and a director of the Ax:son-Johnson Foundation in Sweden. From 1997 to 2001, Dr. Shapiro was Under Secretary of Commerce for Economic Affairs. In that post, he directed economic policy for the Commerce Department and oversaw the nation's major statistical agencies, including the Census Bureau before and during the 2000 decennial census. Prior to that, he was co-founder and Vice President of the Progressive Policy Institute and the Progressive Foundation, Legislative Director for Senator Daniel P. Moynihan, and Associate Editor of *U.S. News & World Report*. Dr. Shapiro also served as the principal economic advisor to Governor Bill Clinton in his 1991-1992 presidential campaign, and senior economic advisor to Vice President Albert Gore, Jr. and Senator John Kerry in their presidential campaigns. In the 2008 campaign, he advised the campaign and transition of Barack Obama. Dr. Shapiro has been a Fellow of Harvard University, the Brookings Institution, and the National Bureau of Economic Research. He holds a Ph.D. and M.A. from Harvard University, a M.Sc. from the London School of Economics and Political Science, and an A.B. from the University of Chicago.

Nam D. Pham is the founder and president of NDP Group, LLC, an economics consulting firm that specializes in assessing complex issues in finance, industrial organization and international trade. Clients of NDP Group include U.S. and foreign corporations, financial institutions, federal and local governments, trade associations and multi-national organizations. Prior to founding NDP Group in 2000, Dr. Pham was Vice President at Scudder Kemper Investments in Boston, where he was responsible for research, asset allocations and currency hedges for Scudder's global and international bond funds. Before that, he was Chief Economist of the Asia Region for Standard & Poor's DRI in Boston. Dr. Pham's has more than a decade of experience in multinational organizations and government agencies in Washington D.C. This tenure includes posts as an economist at the World Bank and a consultant to the Department of Commerce and the Federal Trade Commission. In addition, Dr. Pham has been an adjunct professor at the George Washington University, where he has taught undergraduate and graduate courses in monetary economics, international trade and finance, macroeconomics and microeconomics. Dr. Pham earned a Ph.D. in economics from the George Washington University with concentrations in international trade and finance, economic development and applied microeconomics, a M.A. from Georgetown University and a B.A. from the University of Maryland.