



Short selling: Essential to strong capital markets

James A. Overdahl, Ph.D., Partner, Delta
Strategy Group*

February 2025



* James A. Overdahl is a partner at Delta Strategy Group in Washington, D.C., specializing in financial markets and the U.S. regulatory environment. He was SEC Chief Economist from 2007 to 2010. He acknowledges financial support from the Managed Funds Association (MFA). All views are his own and do not necessarily reflect the views of Delta Strategy Group.

Executive summary

Short selling – borrowing a security’s shares and selling them in anticipation of a price decline – is a practice that receives significant public scrutiny and criticism. It is a good bet that whenever the price of security falls sharply, commentators and market observers will quickly blame the price decline on short selling. Examples of these adverse reactions abound.

Nevertheless, despite these criticisms, academic research and government studies are in broad agreement about the benefits of short selling for a well-functioning, robust, and efficient financial market. One representative example of how short selling benefits financial markets is a study showing that during the 2007/08 financial crisis, regulatory efforts to limit the practice did more harm than good. Short sale bans prevented price adjustments to new information and inhibited efficient market pricing based on economic fundamentals. ¹

This paper takes a fresh look at short selling – what it is, who participates in the securities lending market, how the market works, and what theory and evidence teach us about its effect on market functioning – to form a complete picture of how integral the practice is to the efficiency and robustness of capital markets. The paper begins in Section I by providing a primer on short selling and an overview of how it works in practice. It then describes the roles of the principal participants in the securities lending market: the short sellers who borrow securities, the institutions that lend the securities, and the different entities that intermediate between the two sides of the market and support its functioning. The section’s final part closes by describing how market participants can obtain short exposure without undertaking a short sale.

Section II turns to the evidence on the most salient and well-documented benefits of short selling: its contribution to price discovery and enhancing market efficiency, improving market liquidity by facilitating market making, and enabling investors to manage their investment portfolios efficiently. None of these claims are particularly controversial given how consistently research obtains conclusions supporting each one. This consensus among independent academic researchers underscores the strength of the arguments that short selling benefits market functioning.

On the other hand, short selling does involve certain risks, including unlimited losses, the risk of margin calls, the obligation to repay dividends, and the possibility that the lender may recall the loaned security at any time. However, the short seller primarily bears these risks, and the securities lender has prudential measures in place to mitigate these risks’ effects.

Section III looks at the various approaches to rulemaking that different jurisdictions have taken to regulate short selling, focusing on the United States, the United Kingdom, and the European Union. What stands out is the SEC’s accommodative attitude toward short selling, which has been informed by its own research and that of independent researchers showing its benefits.

The paper then turns to the adverse effects of temporary bans on short selling, where the empirical evidence also delivers consistent conclusions. Regulatory initiatives limiting short selling have tended to degrade the quality of the affected market and failed to achieve the intended goals of preventing price declines. Rules that impair the operation of the securities lending market impede price discovery, reduce market liquidity, and hamper risk management while increasing trading costs and inhibiting capital formation. Several studies document how bans on short sales and mandates to disclose publicly short sales adversely affect market quality.

¹ Ekkehart Boehmer and Charles M. Jones and Xiaoyan Zhang, 2013. "Shackling Short Sellers: The 2008 Shorting Ban," *Review of Financial Studies*, vol. 26(6), pages 1363-1400.

Section IV summarizes the paper’s main conclusions. The evidence provides a solid empirical case for the many benefits that short selling delivers to efficient market operation, preventing market abuse, enhancing price discovery, and improving market liquidity.

I. The structure and mechanics of short selling and securities lending markets

What is short selling?

A short seller either believes that share prices are overvalued and will fall or uses a short position to hedge other parts of his securities portfolio, such as a long position in stock index futures or an options position. Short sellers who believe the price of a share is higher than its fundamental value usually come to this view by researching the future cash flows of the company issuing the shares. If the short seller’s view is correct, they will sell their borrowed shares at a high price and repurchase them at a lower price. The price difference represents a profit for the short seller from selling high and then buying (or covering) low. However, if the share price rises, the short position becomes unprofitable because the trader must repurchase shares at a price higher than that at which he sold the borrowed shares.

Short selling is thus the practice of borrowing shares to sell them in the stock market for a high price with the expectation of repurchasing them at a lower price. Investors use short selling when they believe that a stock is overpriced and expect it to decrease in value or to hedge other positions in their portfolio. Short sellers hope to profit from the difference between a share’s current and future value. In a short sale, the seller uses the securities lending market to borrow stock from a shareholder willing to lend their shares. The short seller then sells the borrowed shares in the stock market, establishing a short position. At some point, the short seller repurchases the shares he previously sold in the stock market and returns them to the lender. Repurchasing the shares in the open market is called “covering” the short position. Stock lending agreements specify when the borrower must return the shares to the lender. If the short seller fails to deliver the borrowed shares to the lender, the transaction does not settle, and the borrower may face a legal claim from the lender.

The mechanics of short selling

Given the basic logic of short selling, how do market participants undertake such transactions and borrow or lend securities in financial markets? This subsection describes the mechanics of short selling.

The securities lending market enables market participants to borrow from and lend to each other in a decentralized manner. Typically, three parties participate in securities lending activity: the lender, who owns the securities; the securities’ borrower; and a lending agent, who facilitates the transaction between the lender and borrower.

Lenders of shares are often large institutions, such as mutual fund companies, pension funds, insurance companies, sovereign wealth funds, university endowments, and foundations, that lend shares from their portfolios.² Lenders may also include broker-dealers, firms that lend securities owned by their clients (called the beneficial owners) for which the broker-dealer serves as an agent.³ These market participants are willing to lend securities to receive lending fee income from borrowers.

² For example the Norwegian sovereign wealth fund, has a well-established securities lending program as can be seen from their 2022 annual report available at: https://www.nbim.no/contentassets/99de366397a847db99ab7a156e15aaa0/gpfg_annual-report-2022.pdf.

³ Broker-dealers are also involved in borrowing securities on behalf of short-selling clients.

In addition, securities lenders obtain income by efficiently managing the cash or near-cash collateral posted by the security's borrower. The borrower receives a contractual amount of interest that accrues from cash or near-cash collateral. If the lender manages the collateral to produce a return exceeding the contractual amount of interest owed to the borrower, the lender can keep the excess. The portion of the interest earned on the reinvested collateral returned to the borrower is called the rebate rate, an amount specified in the securities lending agreement. The rebate can take a negative value for hard-to-borrow stocks, meaning that instead of receiving daily interest payments from the lender, the borrower pays the lender a daily amount. The lender's total compensation is a function of the investment returns on the cash collateral and the rebate rate. Lenders typically share a portion of their total compensation with the agent, although it is common for the lender to retain most of it.

Lending programs typically indemnify the lender who owns the securities from default by the borrower. Therefore, the agent administering the lending program has an incentive to evaluate the borrower's creditworthiness. This incentive mitigates risk to securities lending and helps bolster the safety of the securities lending market. A lending program may assess higher fees to borrowers deemed less creditworthy.

A securities lending transaction involves a lender delivering securities to the borrower's account while the borrower delivers cash or other securities to the lender as collateral. The purpose of collateral is to protect the lender if the borrower fails to return the securities. If the borrower does not return the securities, the lender can use the collateral to replace the unreturned securities by purchasing securities in the market. The value of the collateral exceeds the current value of the securities on loan. That is, the amount of collateral equals the proceeds of the sale of the borrowed security plus a premium that exceeds the current value of the security being loaned (e.g., 2 percent or 5 percent). This amount is adjusted daily depending on changes in the security's price. Cash is the most common collateral for equity security loans in the United States.

Dividends and other cash flows associated with holding a security pledged as collateral also accrue to the borrower posting the collateral. If the security price increases, the borrower provides additional collateral to the lender to support his short position. If the security's price falls, the lender holds more value in collateral than is necessary to replace the unreturned securities. In that case, the lender returns the excess value of the collateral to the borrower. The borrower becomes a contractual counterparty to the lender and must assess the lender's creditworthiness and cash management skills to ensure that the collateral is returned without delay when it is due.

Legal ownership of the securities in a securities lending transaction temporarily passes from the lender to the borrower. The transfer of securities to the borrower and the transfer of collateral to the lender each involve a temporary transfer of title. A lender of securities has the right to recall the securities from the borrower at any time.

In the United States, a short seller must meet a requirement to locate the securities sold short before engaging in a short sale. This means that before executing a short sale, a broker must have a reasonable basis to believe they can borrow the necessary shares to deliver on the settlement date. A broker-dealer can fulfill this requirement by confirming the securities' availability. This locate requirement is required under SEC regulations.⁴

The size of the securities lending market is estimated based on surveys of agent-based securities lenders or through analyses by data vendors such as IHS Markit (formerly Data Explorers) and FIS (formerly SunGard). According to the Financial Stability Oversight Council's (FSOC) 2021 annual report, the estimated value of securities on loan globally was \$3.1 trillion at the end of September 2021.⁵ This figure is up from \$2.5 trillion at the end of September 2020.

⁴ See SEC Rule 203(b)(1).

⁵ Financial Stability Oversight Council's 2021 Annual Report, pages 45-48. Available at: <https://home.treasury.gov/system/files/261/FSOC2021AnnualReport.pdf>

Stocks and government bonds account for most of the estimated value of securities on loan in the United States. According to FSOC, government bonds accounted for \$811 billion, while stock accounted for \$646 billion. Corporate bonds and ETFs are the next largest securities on loan.⁶ The share of cash posted as collateral to borrow securities was estimated to be slightly above 35 percent globally at the end of September 2021.⁷ This level of cash collateral is essential to mitigate the risk to securities lenders. In addition to cash, market participants use U.S. government securities and letters of credit to post collateral in an amount at least equal to the value of the borrowed securities, marked to market daily. Cash posted as collateral and reinvested in financial instruments totaled \$747 billion in the United States at the end of the second quarter of 2021. Reinvestment instruments include commercial paper, bank deposits, money market funds, government repo, corporate securities, and nongovernment repo.⁸

Securities lending market participants

Several different financial institutions supply securities to the securities lending market and intermediate between the two sides of the market. This subsection describes the securities suppliers and intermediaries that facilitate securities lending transactions.

Securities suppliers: registered investment companies and pension funds

Registered investment companies (RICs) – mutual, closed-end, and exchange-traded funds – and pension funds are the leading suppliers of the securities that short sellers borrow in the securities lending market.⁹

By participating in the securities lending market, RICs earn extra income to defray their costs, though they are prohibited from lending more than one-third of the fund's total value at any time.¹⁰ The fees registered investment companies receive augment their returns, offsetting expenses and enhancing performance. Because of fee-sharing arrangements, the fund's shareholders directly benefit from securities lending programs.

Similarly, pensions receive extra income from the fees they receive from participating in securities lending programs because the securities in their portfolio tend to trade infrequently. Lending these securities allows pension funds to make profitable use of assets that would otherwise remain undeployed.

6 Financial Stability Oversight Council's (FSOC) 2021 Annual Report, page 47.

7 Financial Stability Oversight Council's (FSOC) 2021 Annual Report, page 47.

8 Financial Stability Oversight Council's (FSOC) 2021 Annual Report, page 48. Nongovernment repos have collateral of whole loans, equity, and corporate debt.

9 Registered Investment Companies are registered under the Investment Company Act of 1940. Available at: <https://www.sec.gov/investment/divisionsinvestmentsecurities-lending-open-closed-end-investment-companieshtm>

10 According to the Government Accountability Office, by no-action letters, SEC staff effectively limit the percentage of assets in mutual funds and money market funds that can be utilized in securities lending programs. See Statement of Charles A. Jeszeck, Acting Director Education, Workforce, and Income Security, Testimony Before the Special Committee on Aging on "401(K) Plans: Issues Involving Securities Lending in Plan Investments," March 16, 2011, page 5. Available at: <https://www.gao.gov/assets/gao-11-359t.pdf>

Like any other loan market, participating in the securities lending market also entails risks, and effective risk management is essential to safeguard the interests of the fund's shareholders. Funds must manage securities lending to ensure the collateral they receive adequately protects them from losses if the borrower fails to return the securities, defaults, or experiences financial distress that causes delays or added costs in recovering the borrowed securities.¹¹ Consequently, funds must evaluate the creditworthiness of potential securities borrowers and implement risk mitigation strategies to manage those risks.

Intermediaries: prime brokers, broker-dealers, custodian banks, and exchanges

RICs and pension funds require intermediaries to facilitate securities lending transactions. Prime brokers, broker-dealers, custodian banks, and exchanges play related but distinct roles as intermediaries in the securities lending market.

Prime brokers

The prime brokerage units of large investment banks play a crucial role in facilitating the short sales of stocks by providing the infrastructure and back-office services to engage in it. A prime broker (e.g., Goldman Sachs) offers financial services to institutional clients, such as hedge funds or pension funds, which include facilitating the borrowing and lending of securities, managing the risks of short selling, and ensuring compliance with regulatory requirements. The prime broker offers a securities lending facility and serves as the security lending agent, enabling an investor to borrow or lend securities. The prime broker also facilitates the sale of borrowed securities.

Prime brokers are uniquely placed to fulfill this intermediary function in the securities lending market. They have extensive client relationships and access to a wide range of financial instruments and securities across markets, enabling them to function as intermediaries between the short seller (i.e., the securities borrower) and the market participants who lend the securities, such as institutional investment funds (i.e., RICs or pension funds) or broker-dealers. The prime brokers' reach enables short sellers to find and borrow the specific securities they want to sell short.

As intermediaries, prime brokers manage the execution and clearing of short-selling trades. They ensure the borrowed securities are delivered to the buyer and oversee settlement when short sellers close their positions. Prime brokers report short-selling activities to regulatory bodies and ensure compliance with relevant rules and regulations.

Prime brokers also manage short sellers' margin accounts. These accounts allow short sellers to amplify their exposure to the shorted security with leverage. For the duration of a securities lending transaction, the borrower must maintain the collateral at a pre-determined level. The prime brokers closely monitor short positions, the value of collateral, and the margin requirements to ensure that the short seller remains adequately margined. If the security's price rises and causes losses on the short position, the short seller faces a margin call requiring the seller to post additional funds or close the position.

¹¹ When a fund lends securities, the voting rights and the right to dividends and other distributions on the loaned securities transfer to the borrower until the end of the loan. The fund's income from securities lending comes from fees from the borrowers or cash collateral reinvestment. Cash collateral reinvestment is limited to short-term, low-risk, highly liquid interest-bearing instruments.

Broker-dealers

Broker-dealers serve a function like that of prime brokers. A broker-dealer acts as an agent that executes transactions on behalf of its customers or own accounts. These transactions are routed to a securities exchange or the broker-dealer's trading platform if they match another internal order. When the broker-dealer executes orders on the customer's behalf, it acts as a broker. By contrast, it acts as a dealer when executing transactions for its own account. The firm buys or sells as a dealer to facilitate the clients' orders or retain positions for its proprietary trading book.

Another service broker-dealers provide is the infrastructure required to execute securities lending transactions, enabling smooth and efficient short selling. They use their network of short sellers seeking to borrow securities to facilitate securities lending transactions between the short sellers and the lenders (i.e., the broker-dealer's clients). In this way, if an investor wants to borrow a security the broker-dealer does not have in its inventory or its customers' margin accounts, the broker-dealer can obtain the security from a lending agent with whom they have an ongoing commercial relationship.

Broker-dealers also monitor and manage the risks associated with their client's securities lending transactions. They assess potential borrowers' creditworthiness to mitigate default risk and manage the collateral. These prudential measures ensure that the securities borrower provides adequate and appropriate collateral and meets the agreed-upon requirements.

Further, broker-dealers manage the execution of securities lending transactions, ensuring the borrowed securities are delivered and the lender receives the collateral. Broker-dealers also guarantee that the location requirement governing securities lending transactions is satisfied.¹² They manage settlements by ensuring all parties fulfill their obligations per the lending agreement's terms. In this role, broker-dealers must adhere to regulatory guidelines and reporting requirements, maintain records of lending transactions, and provide information to regulatory authorities.

Custodian banks

A custodian bank is another financial institution active in the securities lending market.¹³ Unlike prime brokers and broker-dealers, custodian banks do not engage in short selling themselves. They do, however, offer securities lending services to their clients. They provide infrastructure and support to market participants as part of those services. For example, they monitor and manage the risks associated with securities lending by helping clients assess borrowers' creditworthiness, holding securities in custody accounts for their clients (e.g., institutional investors), and offering them securities lending services.

When an institutional investor lends securities through a custodian bank, the bank manages the collateral associated with the loan. It monitors the loan's collateral and facilitates settlement by ensuring all parties receive the correct securities and collateral at the agreed-upon time. In addition, custodian banks maintain records of the transactions and provide reports to their clients, helping them track their positions and the income generated from securities lending.

¹² Available at: <https://www.sec.gov/rules/2004/07/short-sales#:~:text=Regulation%20SHO%20also%20requires%20short,failures%20to%20deliver%20have%20occurred.>

¹³ Bank of New York (BNY) Mellon, JPMorgan Chase, State Street, and Citigroup are among the largest custodian banks in the United States. The best-known custodian banks outside of the United States include the Bank of China, UBS (Switzerland), Deutsche Bank (Germany), Barclays (England), and BNP Paribas (France).

Exchanges

Securities exchanges such as the New York Stock Exchange (NYSE), NASDAQ, and Chicago Board Options Exchange (CBOE) also play essential roles in reporting the volume of short-selling activity. The NYSE and NASDAQ report the volume of short interest in a stock. Short interest refers to the number of shares sold short for a particular issue as a percentage of the total number of shares outstanding (TSO), the publicly available float.

Moreover, securities exchanges like CBOE provide real-time data and analytics concerning securities lending markets. CBOE generates and sells market indicators based on equity options market data that measure stock borrow rates and serve as a tool for observing intraday departures from historical patterns. Indicators of the term structure of securities borrow rates provide information about the intensity and expected duration of hard-to-borrow conditions in the market for a stock loan. In this way, exchanges are integral to disseminating information about shorting to other market participants.

Alternative ways to gain short exposures

An investor can obtain a short position by selling short a security's shares or buying them at a discount.¹⁴ Arbitrage forces link markets in which different financial instruments are traded so market participants can replicate payoffs associated with short position without selling the security short. There are four ways an investor can obtain a short exposure: by buying an equity option, a futures contract, a swap contract, or an inverse ETF.

An option is a contract that gives the buyer the right to buy or sell stock for a limited time at a specified price. Put options give the owner the right to sell a stock at a specified price, lasting until a specific date. By buying a put option, a market participant can speculate that the underlying security price will fall below the pre-specified price, permitting him to buy it at the pre-specified price and immediately sell it at the prevailing price. In the United States, different venues list options on stocks or stock indices.

Futures contracts are a second way to get a short position. They are standardized legal agreements to buy or sell a specific underlying asset at a particular time in the future at a price determined when a market participant initiates the position. To obtain a short position using a futures contract, a market participant agrees to deliver by selling the underlying security or commodity or accepting the reference price at settlement. The short position's value increases if the futures price falls below the initial price of the futures contract. There are actively traded futures contracts for many types of assets, including stock indices, agricultural commodities, energy products, metals, foreign exchange, interest rate products, and other assets, such as credit indices, digital assets, or even the outcomes of certain events like the weather.

A swap contract is another way market participants can take a short position. A swap is an agreement between two or more parties to exchange cash flows over a fixed period. For example, for a market participant to get short exposure using a swap, he could buy a credit default swap on a specific company that would pay off if a credit event occurred, including failure to make payments when due, bankruptcy, debt restructuring, a change in an external credit rating, or rescheduling payments for a specified reference credit. The payment size relates to the decline in the market value of the reference credit resulting from the adverse credit event.

A final way to get short exposure is trading an inverse exchange-traded fund or inverse ETF. It delivers a daily return that equals the return of an underlying index multiplied by a minus one. An inverse ETF provides short market exposure for investors who might otherwise be unable to take short positions or prefer an inverse product.

¹⁴ Available at: <https://www.sec.gov/rules/2004/07/short-sales#:~:text=Regulation%20SHO%20also%20requires%20short,failures%20to%20deliver%20have%20occurred>.

Short selling is only one of several ways a market participant can get short exposure to a security. By taking a short position, market participants can trade on their assessment of future price changes or manage risks from existing exposures.

II. Evidence on short selling's effect on market quality

Short selling's benefits

A critical question in public policy discussions about short selling centers on the impact of short sales on market quality. A large body of evidence from academic research addresses this question and uniformly supports the conclusion that short-selling benefits markets and market participants by promoting market quality. First, the evidence shows that short selling contributes to price discovery and promotes the proper valuation of securities, improving capital allocation by directing it to its most productive use. Second, short selling contributes to market quality by providing liquidity to the market through the market-making process. By helping market makers manage their positions and mitigate risks, short selling allows them to offer narrower bid-ask spreads. It also facilitates buying and selling securities. Finally, short selling enables investors to hedge portfolio risk efficiently. For example, an investor with long-only exposure can manage the risk related to that position through short positions that offset or hedge a portion of the long-only risk.

Short selling's contribution to price discovery

Short selling contributes to price discovery by allowing investors with negative views about a security's prospects to trade based on them. Short selling brings current information to the market through trading, reflecting the security's fundamental value.¹⁵ In this way, short selling improves capital formation by facilitating a more efficient allocation of capital and directing it to its most productive use. One of the principal effects of short selling is that it reduces the risk of speculative (or manipulative) bubbles. By providing informed selling pressure on overvalued stocks, short selling prevents the misallocation of capital to those overvalued stocks.¹⁶

The order flow resulting from short selling contains valuable information related to the proper valuation of securities.¹⁷ Securities markets incentivize analysts to invest resources into researching, analyzing, and interpreting public information to assess a firm's fundamental value and trade on that information. If the analyst concludes that a stock is undervalued, the investor can purchase the stock. Conversely, if the assessment leads the analyst to conclude that the stock is overvalued, the investor can sell their stock from their portfolio if they already own it (a so-called long sale). Even if the investor does not own the stock, he can trade on his assessment that a firm is overvalued with a short sale. Selling a security short reveals information to the market about the firm's fundamental value and contributes to price efficiency.

¹⁵ See Owen A. Lamont, "Go Down Fighting: Short Sellers vs. Firms," NBER Working Paper Series, August 2004.

¹⁶ Ekkehart Boehmer and Julie Wu, Short Selling, and the Informational Efficiency of Prices, (Working Paper, Aug. 16, 2010). Available at: <http://ssrn.com/abstract=972620>.

¹⁷ See Owen A. Lamont, "Go Down Fighting: Short Sellers vs. Firms," NBER Working Paper Series, August 2004.

The Financial Stability Board (FSB) recognized the importance of securities lending and short selling to price discovery and their contribution to market quality. The FSB report concludes, “securities lending and repo markets play crucial roles in supporting price discovery and secondary market liquidity for various securities issued by both public and private agents.”¹⁸

Studies have shown that short selling is crucial for correctly valuing stocks and promoting the informational efficiency of stock markets. For example, research by Owen Lamont and Charles Jones shows that short-selling constraints, such as regulatory restrictions or high borrowing costs, degrade the stock market’s ability to capture relevant information about the prospects of corporate cash flows and lead to the overpricing of stocks.¹⁹ In the presence of such constraints, it is more costly, or even impossible, for market participants to engage in the transactions required to bring the stock price to a level consistent with market efficiency. Other studies have found that short sale restrictions can impede market efficiency in markets closely related to the stock market, such as the equity options market.²⁰

Other studies have questioned the claim that short selling is responsible for unwarranted declines in stock prices by “piling on” when prices are declining and generating downward momentum in stock prices. Such a presumption served as a basis for regulatory restrictions of short selling in the early days of federal stock trading regulation. A 2009 SEC report found that short selling was more likely to occur in rising markets than in falling markets, a finding that is consistent with the idea that short sellers target overvalued stocks and purchase shares to cover their short positions when prices drop. The same study also found that for liquid, high-capitalization stocks, so-called long sellers – those who sell shares they own – traded more in declining markets than short sellers.²¹ If there is a piling-on effect when share prices fall, it is generally the case that ordinary selling by stock owners is more responsible for the price decline. Short sellers are more likely to cover their short positions in a declining market by buying back shares.

Research also provides several examples of short sellers uncovering overvalued stocks and establishing short positions to profit from their assessment.²² One of the best-known examples of a short seller uncovering an overvalued company occurred in 2001 with Enron. The prominent investor and short seller Jim Chanos first uncovered Enron’s questionable accounting practices and then took a short position in Enron’s stock based on his research.²³

18 Available at: https://www.fsb.org/wp-content/uploads/r_130829b.pdf

19 Owen A. Lamont and Charles M. Jones, “Short Sale Constraints and Stock Returns,” *Journal of Financial Economics*, Nov. 2002. See also by Owen A. Lamont, “Short Sale Constraints and Overpricing,” in *The Theory and Practice of Short Selling*, Frank Fabozzi, Ed. (New York: John Wiley and Sons, 2004).

20 Richard B. Evans, Christopher C. Geczy, David K. Musto, and Adam V. Reed, “Failure is an Option: Impediments to Short Selling and Option Prices,” *Review of Financial Studies*, Vol. 2, No. 5, May 2009, pp., 1955-1980; and Eli Ofek, Matthew Richardson, and Robert Whitelaw, “Limited Arbitrage and Short Sales Restrictions: Evidence from the Options Markets,” *Journal of Financial Economics*, Vol. 74, No. 2, November, 2004, pp. 305-342.

21 Karl B. Diether, Kuan-Hui Lee, and Ingrid Werner, “Short-Sale Strategies and Return Predictability” *The Review of Financial Studies*, 22 (2), 2009, 575-607.

22 See Owen A. Lamont, “Go Down Fighting: Short Sellers vs. Firms,” NBER Working Paper Series, August 2004.

23 The role of Jim Chanos and his firm’s research on Enron before establishing a short position in Enron shares is described in the book by McLean, Bethany, and Peter Elkind. 2004. *The Smartest Guys in the Room*. Harlow, England: Penguin Books. The book was also the basis for a 2005 movie with the same name.

Another example of short sellers uncovering crucial and accurate information about an overvalued stock occurred in 2020 with the German electronic payments company Wirecard.²⁴ Research by investors raised questions as early as 2015 about Wirecard’s accounting practices and allegations of money laundering and fraud. Because of this research, some investors began to take short positions in the company. These investors signaled to the market their view that Wirecard had internal problems and was, therefore, overpriced. In April 2020, the company’s shares dropped more than 26 percent after a special audit reviewing allegations about its accounting practices left unanswered questions. The company later acknowledged that the results of an audit failed to find €1.9 billion belonging to the company and held in trust accounts—an amount equal to about one-quarter of the value of Wirecard’s balance sheet.²⁵

In summary, the information uncovered by the research of short sellers contributes to market efficiency by properly allocating capital based on companies’ accurate prices that reflect their actual fundamental value.

Short selling’s contribution to market liquidity

Short selling also contributes to market quality by providing liquidity to the market through the market-making process. It enables market makers to manage their positions and mitigate risks, lowering bid-ask spreads and making it easier for market participants to transact in securities. Short selling increases short-term market liquidity by allowing market makers to temporarily increase the supply of securities available to meet demand for those securities.²⁶

In this way, securities lending is vital to smooth market functioning. Market-making improves market liquidity, lowers trading costs, and is an important contributor to the quality of public financial markets. Moreover, market makers use short selling to facilitate customer orders in other securities, such as equity-based options. The FSB has observed that short sellers “are central to financial intermediaries’ abilities to make markets and facilitate the implementation of various investment, risk management, and collateral management strategies.”²⁷ Market makers account for about 35 percent of short sales.

The contribution of short selling to risk management

Finally, short selling enables investors to manage their portfolios by hedging risk efficiently. For example, an investor with long-only exposure can manage the risk associated with this position through short positions that offset or hedge a portion of the long-only risk. In this case, the short position does not indicate that the investor believes a company is overvalued. Instead, it is a way for the investor to protect their long exposure against a market downturn. For example, by taking short positions in a basket of stocks, an index, or an ETF, short sales allow investors to reduce their exposure to the risks associated with unexpected price changes in the securities they have sold short.

24 Paul J. Davies and Juliet Chung, “Short Sellers Made \$2.6 Billion Off Wirecard’s Plunge, but Not Without Scars.” Available at: <https://www.wsj.com/articles/short-sellers-made-2-6-billion-off-wirecards-plunge-but-not-without-scars-11592654586> and Paul J. Davies, “Payments Giant Wirecard’s Shares Plunge on \$2 Billion Audit Deception,” The Wall Street Journal, June 18, 2020. Available at: https://www.wsj.com/articles/payments-giant-wirecards-shares-plunge-on-2-billion-audit-deception-11592474551?mod=article_inline

25 Paul J. Davies, “Wirecard Shares Tumble as Questions Remain After Special Audit,” The Wall Street Journal, April 28, 2020. Available at: https://www.wsj.com/articles/wirecard-tumbles-as-questions-remain-after-special-audit-11588071316?mod=article_inline

26 See SEC Staff Study in Appendix E (“The academic literature provides ample theoretical support for, and empirical evidence of the importance of short selling for liquidity.”).

27 Available at: https://www.fsb.org/wp-content/uploads/r_130829b.pdf

Using short selling for risk management facilitates arbitrage transactions in which professional traders reduce market segmentation. When market participants discover arbitrage opportunities, experienced traders have the tools, many of which are automated, to place buy, sell, or sell-short orders that earn a profit due to the price differences between two related securities. This trading eliminates these arbitrage opportunities and returns the prices of the related products to their proper alignment. This knitting together of products and markets also contributes to price discovery and market efficiency by transmitting information reflected in the price of one product to related products. Facilitating arbitrage between markets is an essential way that short selling contributes to market quality.

Potential risks of short selling

Despite the benefits of short selling, the practice is risky. The risks include unlimited losses if the relevant security price moves contrary to the short seller's expectations. The securities borrower also faces the risk of a margin call if the security's price rises or the value of collateral falls. Additional risks include the obligation to repay dividends to the securities lender, dealing with corporate actions, and the risk of counterparty insolvency.²⁸ A further risk is that the securities lender may have the right to recall the loaned securities at any time. If the securities borrower has sold those securities, they must purchase them and return them to the lender. The obligation to repurchase securities may result in liquidity risk, which raises the cost to the short seller of repurchasing the security and avoiding a failure to deliver.

Another risk is that a security becomes hard to borrow, which means it is difficult to borrow or unavailable for borrowing. Securities become hard to borrow because shares are scarce, demand for short selling the security is high, or the frequency of fail-to-deliver occurrences increased. Brokers are responsible for identifying and managing hard-to-borrow stocks. They charge higher daily fees to short sellers who borrow such securities. Heavily shorted securities are also at risk of a so-called buy-in. A buy-in occurs when a broker-dealer closes out a short position if the original short seller fails to deliver the security on time or at all, and the lender demands it back.

A so-called short squeeze represents yet another risk to short sellers. A short squeeze occurs when market participants drive up the price, even if it is only temporary. The most recent example of an attempted short squeeze occurred in January 2021, with the stock of video game retailer GameStop. Short interest in GameStop was high, and as short sellers tried to buy shares to cover their short positions, the price rose. A coordinated online army of retail investors following the WallStreetBets internet forum on Reddit's social media website triggered the attempted short squeeze. On January 27, 2021, the attempted short squeeze caused GameStop's stock price to close at \$347.51 per share (with an intraday high of around \$380 per share), over 20 times the \$17.25 valuation at the beginning of the month.²⁹ The next day, January 28, 2021, GameStop stock reached a premarket high of over \$500 per share.³⁰

²⁸ Another risk results from the obligation to repay dividends for stocks paying a dividend that is not cash or regular stock but a non-tradable asset. In such a case, the short seller cannot get the dividend to deliver to the lenders. In some instances, issuers have intentionally designed dividends to be non-tradable to deter short-selling of their shares. See Matt Levine, "Don't Squeeze the Shorts," Bloomberg View, June 8, 2023. Available at: <https://www.bloomberg.com/opinion/articles/2023-06-08/don-t-squeeze-the-shorts?embedded-checkout=true>.

²⁹ See Jeremy Salucci, "An in-depth timeline of the GameStop short squeeze saga," TheStreet, September 15, 2023. Available at: <https://www.thestreet.com/investing/stocks/a-timeline-of-the-gamestop-short-squeeze>.

³⁰ Another attempted short squeeze, known as #MOASS ("mother of all short squeezes"), occurred in October 2021 with the stock of movie theater company AMC.

Because of episodes like the GameStop short squeeze, short selling has attracted attention in popular culture. The 2023 movie *Dumb Money* and the 2015 movie *The Big Short* may create the impression that short selling is a recent invention. However, historical records show that the practice is as old as the stock market. As soon as stocks began trading, investors were figuring out ways to short them—even if short selling is not the term that they used to describe the practice.³¹

III. Regulation of short selling

Like other financial activities, short selling is regulated, with some variation in regulatory standards and guidelines across jurisdictions. This section summarizes the regulatory environments in the United States, European Union, and United Kingdom to provide a sense of this variation. In the United States, the section focuses on the SEC’s Reg SHO, a pilot study SEC staff conducted to study the effects of short-selling restrictions, and how it has informed the United States’ more accommodative approach to short-selling.

United States

In the United States, the Securities Exchange Act of 1934 gives the SEC authority to regulate short sales of securities at each step of the transaction.³² Over the years, however, federal regulation has reflected that short selling promotes market quality and aids all investors by contributing to price discovery, liquidity, risk management, and lowering the cost of trading and raising capital. However, despite the SEC’s recognition of the benefits of short selling, it prohibits so-called naked short selling. In a naked short sale, the seller does not borrow or arrange to borrow the securities in time to deliver them to the buyer within a standard settlement period (e.g., T+1, the trade date plus one day).

Regulation SHO

Regulation SHO is the principal regulation governing short sales. It imposes four main requirements on market participants:

1. Brokers and dealers must properly mark orders and maintain documentation to distinguish between long and short sales.
2. Reg SHO’s price test restriction “requires trading centers to establish, maintain, and enforce written policies and procedures to prevent the execution or display of a short sale at an impermissible price when a stock has triggered a circuit breaker by experiencing a price decline of at least 10 percent in one day. Once a circuit breaker has been triggered, the price test restriction applies to short sale orders in that security for the remainder of the day and the following day unless an exception applies.” This restriction is known as the alternative uptick rule. It replaced the original uptick rule that permitted short sales only when a stock’s price exceeds the previous trade price.

³¹ The practice of short selling can be traced back to the early 17th century when investors conducted a bear raid on the Dutch East India Company. This historical context shows how long investors have practiced short selling. See Neal, Larry. 2005. “Venture Shares in the Dutch East India Company,” in William N. Goetzmann and K. Geert Rouwenhorst (eds.), *The Origins of Value: The Financial Innovations That Created Modern Capital Markets*. Oxford: Oxford University Press.

³² Short transactions using derivatives are also regulated in the United States. The SEC regulates some derivatives, such as stock options and securities-based swaps. The Commodity Futures Trading Commission (CFTC) regulates others, such as futures, futures options, and most swaps contracts.

3. Reg SHO requires a broker-dealer arranging short sales to have reasonable grounds to believe it can borrow and deliver the security to the buyer on or before the settlement date, known as the so-called locate requirement. The broker-dealer must locate the security and document it before conducting the short sale. This requirement does not apply to short sales by market makers engaged in bona fide market-making activities because of their leading role in providing market liquidity.
4. Reg SHO requires brokers and dealers to close out positions when there is a failure to deliver. If the position is not closed by a specific time, the broker or dealer may cease further short sales in that security unless they borrow or enter into an agreement to borrow the security (a so-called pre-borrowing requirement) until the broker or dealer purchases shares to close the position and the purchase clears and settles. In addition, Reg SHO requires that broker-dealers close significant and persistent failures to deliver -- so-called threshold securities, which the SEC identifies on its website.³³ When a security becomes a threshold security, short sellers and broker-dealers face additional requirements, including the pre-borrow requirement.

Exchanges and self-regulatory organizations such as the NYSE and FINRA can also have their own rules governing short sales and SEC regulations. The SEC monitors compliance with Reg SHO and takes enforcement actions against individuals or firms that violate the rules, including fines, penalties, and other enforcement actions.

The accommodating attitude to short selling embodied in Reg SHO is consistent with academic evidence showing that certain restrictions on short selling degrade market quality by reducing liquidity and raising the overall trading costs. Removing such limits improves market quality, benefiting all investors, particularly long-term, buy-and-hold investors in mutual funds.³⁴ Those investors bear a disproportionate share of the funds' trading costs in creating and redeeming shares.

A separate reason for permitting short sales is its value to market participants for managing risk. For example, a convertible bond is a significant source of financing for companies.³⁵ In a research paper, Daniel Choi, Mila Getmansky, Brian Henderson, and Heather Tookes find that investors who buy convertible bonds and simultaneously short the issuer's stock -- so-called convertible bond arbitrageurs -- are important sources of financing for corporations that issue convertible bonds.³⁶ If convertible bond arbitrageurs cannot sell short shares, they are less willing to buy convertible bonds, raising the cost to corporations for this type of financing.

Reg SHO pilot study

The SEC's analysis of its original uptick rule exemplifies how research has influenced the SEC's accommodative approach to short selling. The original uptick rule, adopted in 1938, was the SEC's first official restriction on short selling. It required that short sales meet a tick test before placing a short sale order in the market: An investor can only engage in a short sale when the stock's price is higher than the previous price.

³³ The SEC publishes fails-to-deliver data on their website at: <https://www.sec.gov/data/foiadocsfailsdata.htm>

³⁴ See "Economic Analysis of the Short Sale Price Restrictions Under the Regulation SHO Pilot," Office of Economic Analysis, United States Securities and Exchange Commission, February 6, 2007.

³⁵ Convertible bonds allow holders to convert the bond to common stock at a price specified in the bond contract. Buyers of convertible bonds depend on the ability to sell short stock to hedge the bond's equity component. If they cannot sell short shares, they are less willing to buy convertible bonds, raising the cost to corporations for this type of financing.

³⁶ See Daniel Choi et al., "Convertible Bond Arbitrageurs as Suppliers of Capital," *Review of Financial Studies*, Vol. 23, No. 6, June 2010, pp. 2492-2522.

In 2007, the SEC's Office of Economic Analysis studied the effects of the uptick rule from data collected during the Regulation SHO (Reg SHO) Pilot program. The SEC's economists designed an experiment to assess the impact of the uptick rule using scientifically sound methods. They suspended the uptick rule and Nasdaq bid test for approximately 1,000 stocks in the Russell 3000. The SEC's economists compared a wide array of market quality metrics for the pilot stocks and control stocks over a pre-pilot period before the rule was suspended (January 29–April 29, 2005) and a pilot period (May 2–October 31, 2005).

The study concluded that removing the price tests had a significant effect on short-selling volume, the mechanics of short selling, order routing decisions, displayed depth, and intraday volatility. It also found that removing the price tests did not significantly affect short interest, market quality, or liquidity. They looked for signs of bear raids but found no indication that removing the price tests was associated with increased market manipulation. The study also found evidence that removing the uptick rule led to lower volatility for stocks with high market capitalization and increased volatility for stocks with low market capitalization.³⁷ The SEC made the data from the Reg SHO pilot available to outside researchers, who conducted an independent analysis. Their results independently confirmed the SEC economists' conclusions.³⁸ Based on these findings, the SEC eliminated the uptick rule in 2007.

In 2010, the SEC reintroduced the so-called alternative uptick rule (Rule 201) in response to the financial crisis.³⁹ The rule intends to restrict short selling from exerting further price pressure on securities whose prices have fallen by 10 percent in one day. If a security triggers a circuit breaker by declining at least 10 percent in a day, short selling is permitted if the security's price is above the current national best bid. The short-selling ban applies to orders submitted for the remainder of the day on which the price decline triggered the circuit breaker and the following day. In this way, the SEC limits the scope of the short-selling restriction to cases when there has been an extreme price decline and for a limited time.

United Kingdom

The Financial Conduct Authority (FCA) is the primary regulator of short selling and securities lending in the United Kingdom (UK). The FCA's rules governing short-selling activities include disclosure requirements, restrictions on naked short selling, and provisions related to identifying short positions. Market participants engaged in short selling must disclose their short positions to the FCA and the public when they reach certain FCA-determined disclosure thresholds that depend on the security and market conditions. This regulation is a legacy of Regulation (EU) No 236/2012 Short Selling Regulation (SSR).

The UK government is considering introducing a recalibrated disclosure regime and removing individual firms' public disclosure requirements in favor of aggregated public disclosure of net short positions by the issuer.⁴⁰ In 2023, the UK government published a Call for Evidence on the UK's Short Selling Regulation that recognizes the vital role short-selling plays in promoting healthy, confident financial markets and seeks views on how to reform its regulation, which is consistent with the EU's 2012 SSR.⁴¹

37 "Economic Analysis of the Short Sale Price Restrictions Under the Regulation SHO Pilot," Office of Economic Analysis, U.S. Securities and Exchange Commission, February 6, 2007. Available at: <https://www.sec.gov/news/studies/2007/regshopilot020607.pdf>.

38 Karl B. Diether, Kuan-Hui Lee, and Ingrid M. Werner, "It's SHO Time! Short-Sale Price Tests and Market Quality," *Journal of Finance*, Vol. LXIV, No. 1, February 2009, pp. 38–73.

39 Available at: <https://www.sec.gov/news/press/2010/2010-26.htm>.

40 Available at: <https://www.gov.uk/government/calls-for-evidence/short-selling-regulation-call-for-evidence>.

41 Available at: [HM Treasury](https://www.gov.uk/government/calls-for-evidence/short-selling-regulation-call-for-evidence). Published 9 December 2022.

The UK Short Selling Regulations 2024 (SSR 2024) reflects the conclusions of the 2022 Review of the Short Selling Regulation and 2023 Consultation on sovereign debt and credit default swaps reached and is intended to modernize the UK SSR and make the UK markets more competitive and efficient.⁴²

The SSR 2024 reinstates the original requirement for firms to notify the FCA of net short positions above 0.2% of issued share capital. This threshold was lowered to 0.1% in 2021 in response to market uncertainty caused by the Covid-19 pandemic. The government has laid a separate statutory requirement that will increase the threshold in the UK SSR to 0.2% from February 5, 2024.⁴³

Furthermore, under the SSR 2024, the FCA must publish aggregated net short positions based on individual position notifications it receives from short sellers, while the UK SSR requires the FCA to publish individual net short positions above 0.5% of issued share capital, including the identity of the short seller. The new approach will set out the overall net short position in a particular company's shares but avoids disclosure of the names of individual short sellers, as is currently the case under the UK SSR. HM Treasury has introduced SSR 2024 in the UK Parliament.

European Union

Various directives and regulations regulate the European Union's short selling and securities lending to ensure market integrity, stability, and investor protection, with the European Securities and Market Authority (ESMA) acting as the primary regulator of short selling and securities lending.⁴⁴ National regulators in each member state may also have specific rules for short-selling and securities lending activities, including details about disclosure thresholds, reporting requirements, and supervision. Market participants in the European Union engaging in short selling and securities lending activities must comply with specific reporting and disclosure requirements at the European and national levels.⁴⁵

At the European level, the primary regulations governing short selling include the Markets in Financial Instruments Directive II (MiFID II), the European Market Infrastructure Regulation (EMIR), and Regulation (EU) No 236/2012 on short selling and specific aspects of credit default swaps (SSR), and the Regulation (EU) 2015/2365 on transparency of securities financing transactions (SFTR).

MiFID II requires market participants engaging in short selling to disclose their short positions to the relevant authorities when they reach thresholds determined by individual EU member states. Market participants must publicly disclose certain short positions in equities and sovereign debt.

EMIR primarily regulates derivatives and central clearing, but it also has implications for securities lending. It sets out requirements for reporting and clearing certain derivative transactions involved in securities lending activities for risk management reasons.

42 The review is available at: <https://www.gov.uk/government/calls-for-evidence/short-selling-regulation-call-for-evidence>, and the consultation is available at: <https://www.gov.uk/government/consultations/short-selling-regulation-consultation-sovereign-debt-and-credit-default-swaps>.

43 Available at: https://www.legislation.gov.uk/ukxi/2023/1258/pdfs/ukxi_20231258_en.pdf.

44 ESMA directives and regulations can be found at: <https://www.esma.europa.eu/esmas-activities/markets-and-infrastructure/short-selling>.

45 Available at: <https://www.esma.europa.eu/press-news/esma-news/esma-renews-its-decision-requiring-net-short-position-holders-report-position-0>

SSR sets out the conditions under which holders of net short equity positions must notify competent authorities and the public.⁴⁶ Its purpose is to increase the transparency of significant short positions investors hold in specific financial instruments, mitigate settlement risk and other risks related to naked short selling, mitigate risks in sovereign debt markets posed by uncovered (i.e., naked) Credit Default Swap (CDS) positions, ensure the competent authorities have clear powers to intervene in exceptional situations, and ensure coordination between Member States and ESMA in extraordinary situations.

SFTR focuses on regulating securities financing transactions, including securities lending. The regulation imposes transparency requirements on market participants engaged in securities financing transactions and requires them to report securities lending and repo market transactions to trade repositories.⁴⁷

How short-selling constraints, bans and public reporting can harm markets 2008 bans on short selling and their impact on market quality

Short selling has been banned temporarily in several jurisdictions during extreme market turbulence. The premise of these bans relies on the notion that short selling destabilizes securities prices. Empirical studies challenge this premise by showing that short-selling prohibitions do not prevent market turbulence and can be counterproductive. These empirical studies show that short sales are less aggressive than the sales made by those holding shares who wish to dispose of them. The studies also find that short selling of financial shares is more intense in rising markets rather than falling markets, which makes intuitive sense given that short sellers, like any investor, seek to buy low and sell high – or in a short seller’s case, borrow high and cover low.⁴⁸

The SEC’s 2008 trading ban on financial stocks

In the United States, the SEC used its emergency authority during the 2007/08 financial crisis to ban short selling in 799 financial stocks and, ultimately, more than 900 stocks. The ban was part of then-Treasury Secretary Henry Paulson’s aggressive approach to managing the crisis, altering investor perceptions, bolstering investor confidence, stabilizing markets, and preventing excessive price declines in financial shares. The ban also responded to rumors of bear raids on systemically important financial institutions and concern that short selling was causing sudden and excessive fluctuations in financial institutions’ share prices. The SEC lifted the ban three weeks later.

SEC economists and academic researchers extensively studied the effects of the ban. The results paint a uniform picture of a policy that failed any reasonable cost-benefit test. Primarily, the ban did not slow the decline in the price of financial stocks. Moreover, the studies revealed that market participants suffered adverse effects without offsetting benefits. However, the ban was effective in at least one way: shorting activity for the affected stocks declined.

46 Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012R0236>. The EU uses the term “competent authorities” to describe the member country’s relevant regulator.

47 Available at: <https://www.esma.europa.eu/data-reporting/sftr-reporting>

48 See Daniel Aromi and Cecilia Caglio, Memorandum from SEC Office of Economic Analysis to SEC Chairman Christopher Cox on Short Selling Activity During the First Weeks of September 2008 (Dec. 16, 2008), (“SEC Memorandum”) available at: <http://www.sec.gov/comments/s7-08-09/s70809-369.pdf>. (“We find that for all but one subgroup, short selling is higher during periods of extremely positive returns than in periods of extreme negative returns. . . These findings indicate that, on average, short seller’s intraday activity is contrarian. On average, short sales seem to decrease intraday volatility by selling relatively more during periods of positive returns.”)

The studies also found the ban was counterproductive, as it led to severe degradation in market quality by increasing intraday stock price volatility, reducing market liquidity, increasing bid-ask spreads and price impact, reducing pricing efficiency, increasing trading costs, and resulting in more significant pricing errors as shares failed to reflect all available information.⁴⁹ It also led to substituting other instruments, such as equity or credit default swaps, to gain short exposure. The studies documented that the ban impaired arbitrage and hedging processes and led traders to unwind their positions, which resulted in additional selling pressure on financial shares. There were also disruptions in equity option markets that relied on short selling for hedging option positions and conducting put-call parity arbitrage transactions. These disruptions led to option markets with wider bid-ask spreads, reduced market depth, and reduced volume.

Further, exchange-traded funds (ETFs) that depend on short exposure halted the creation of new shares. ETFs rely on swaps to adjust exposure, but swap dealers face constraints related to hedging their exposures. As a result, ETFs traded at a premium to their net asset value because they could not create new shares to meet demand.

The extensive empirical evidence documenting the adverse effects of the 2008 short-selling ban led policymakers to conclude that the ban was counterproductive. As then SEC Chair Christopher Cox was preparing to leave the agency, he explicitly stated that the biggest mistake of his tenure had been to agree to the ban.⁵⁰

One problem the SEC faced in 2008 after imposing the short sale ban was how to remove it. The SEC decided to tie the end of the 2008 short-selling ban to establishing the TARP program, but it reached that decision after introducing the ban.

Short sale bans outside of the United States

In 2008, the United Kingdom, Germany, France, Italy, and other European countries introduced temporary short-selling bans.⁵¹ Several studies evaluated the evidence from these bans. Australia moved to ban naked short selling entirely in September 2008.⁵² Germany banned the naked short-selling of eurozone securities in 2010.⁵³ Spain, Portugal, and Italy introduced short-selling bans in 2011 and again in 2012.⁵⁴

With the 2008 ban in the UK, the Financial Services Authority imposed a moratorium on short selling of 29 leading financial stocks from September 19, 2008, until January 16, 2009.⁵⁵ A 2012 study of the United Kingdom's 2008 ban on short sales found that the ban impaired price discovery.⁵⁶

49 Ekkehart Boehmer and Charles M. Jones and Xiaoyan Zhang, 2013. "Shackling Short Sellers: The 2008 Shorting Ban," *Review of Financial Studies*, vol. 26(6), pages 1363-1400.

50 Amit R. Paley and David S. Hilzenrath, "SEC Chief Defends His Restraint," *The Washington Post*, December 24, 2008.

51 David Oakley, "Short-selling ban has minimal effect," *Financial Times*, December 18, 2008. Larry Harris "A Debate as a Ban on Short-Selling Ends: Did It Make Any Difference?" *The New York Times*, October 7, 2008.

52 Available at: <https://asic.gov.au/about-asic/news-centre/find-a-media-release/2008-releases/08-205-covered-short-selling-not-permitted/>

53 Alan Crawford, "Germany to Temporarily Ban Naked Short Selling, Some Swaps of Euro Bonds." *Bloomberg*, May 18, 2010.

54 Tracy Rucinski; Stephen Jewkes, "Spain, Portugal, and Italy reinstate the short-selling ban," *Reuters*. July 23, 2012

55 FSA introduces short-selling ban, *BBC News*, 19 September 2008. Available at: <http://news.bbc.co.uk/2/hi/business/7624012.stm>

56 Ian W. Marsh, Richard Payne, Banning short sales and market quality: The UK's experience, *Journal of Banking and Finance*, Volume 36, Issue 7, 2012, Pages 1975-1986.

In September 2008, Australia temporarily banned short selling and later placed an indefinite ban on naked short selling. On October 21, 2008, Australia extended its short-selling ban for another 28 days.⁵⁷

Additionally, in September 2008, Germany, Ireland, Switzerland, and Canada banned short selling of leading financial stocks. France, the Netherlands, and Belgium also banned naked short-selling of leading financial stocks. In Italy, the Commissione Nazionale per le Società e la Borsa (CONSOB) banned short selling in financial stocks from September 19, 2008, to January 31, 2009. In contrast to the approach taken by other countries, Chinese regulators responded by allowing short selling, along with a package of other market reforms.⁵⁸ Short selling was permitted entirely on March 31, 2010, limited to “large blue-chip stocks with good earnings performance and little price volatility.”⁵⁹ However, in 2015, short selling was effectively banned due to legislative restrictions on borrowing stocks following the same year’s stock market crash.⁶⁰

Studies conducted over the past fifteen years demonstrate that short-selling bans damage the price discovery process by delaying the time it takes for the market to reach a consensus on a given stock’s accurate price. A 2014 study of China’s 2010 pilot to lift a ban on short selling and margin-trading for a designated list of securities found that lifting such bans increased price efficiency.⁶¹

Numerous academic studies have analyzed the effects of short-selling bans, particularly during the 2007/08 financial crisis. Beber and Pagano (2013) found that short-selling bans during the crisis were counterproductive, leading to increased stock price volatility and reduced market liquidity. The result was a less efficient market. Bid-ask spreads increased 3.43 times for U.S. stocks subject to the ban, which means buyers paid more and sellers received less.⁶² Boehmer, Jones, and Zhang (2013) found that the U.S. short-selling ban in 2008 reduced liquidity and increased trading costs. The study also found no evidence that the ban helped stabilize the prices of the affected stocks.⁶³

Saffi and Sigurdsson (2011) analyzed the effects of short-selling restrictions on price efficiency in 26 countries. They found that tighter constraints on short selling were associated with reduced price efficiency, leading to more significant pricing errors. This study uses a global dataset from 2005 to 2008 that includes more than 12,600 stocks from 26 countries.⁶⁴

Finally, a study by Robert Battalio, Hamid Mehran, and Paul Schultz, published by the Federal Reserve Bank of New York (2012), found that banning short selling did little to slow the decline in the prices of financial stocks.⁶⁵

57 ASIC extends ban on covered short selling, October 21, 2008. Available at: <https://web.archive.org/web/20120320173610/http://www.asic.gov.au/asic/asic.nsf/byheadline/08-210+ASIC+extends+ban+on+covered+short+selling?openDocument>

58 Samuel Shen and Lu Jianxin, “China to launch stocks margin trade, short sales,” Reuters, October 5, 2008. Available at: <https://www.reuters.com/article/rbssFinancialServicesAndRealEstateNews/idUSSHA10179120081005>

59 Rui Li, Nan Li, Jiahui Li, and Chongfeng Wu, “Short selling, margin buying and stock return in China market,” *Accounting and Finance*, Volume 58, Issue 2, June 2018. Pages 477–501

60 Nathaniel Taplin, Saikat Chatterjee, “China stock exchanges step up crackdown on short selling,” Reuters, August 4, 2015. Available at: <https://www.reuters.com/article/us-china-markets-shorting-idUSKCNQ909E20150804>

61 C. Chang, Yan Luo, Jinjuan Ren, Short-selling, margin-trading, and price efficiency: Evidence from the Chinese market, *Journal of Banking and Finance*, Volume 48, 2014, Pages 411–424.

62 Beber, A., and Pagano, M. (2013) - “Short-Selling Bans Around the World: Evidence from the 2007–09 Crisis” *Journal of Finance*, Volume 68, Issue 1 February 2013 Pages 343–381

63 Ekkehart Boehmer, Charles M. Jones, Xiaoyan Zhang, “Shackling Short Sellers: The 2008 Shorting Ban,” *The Review of Financial Studies*, Volume 26, Issue 6, June 2013, Pages 1363–1400.

64 Pedro A. C. Saffi, Kari Sigurdsson *Review of Financial Studies*, Volume 24, Issue 3, March 2011, Pages 821–852.

65 Robert Battalio, Hamid Mehran, and Paul Schultz, “Market Declines: What Is Accomplished by Banning Short-Selling?” Federal Reserve Bank of New York, *Current Issues in Economics and Finance*, vol. 18, no. 5 (2012). Available at: https://www.newyorkfed.org/medialibrary/media/research/current_issues/ci18-5.pdf

Covid bans

In addition to the 2008 short-selling bans, European market regulators temporarily banned or restricted short-sale activity as stock prices declined after the COVID-19 pandemic. The stated goal of those bans and restrictive measures on short selling was to stem stock market losses arising from the coronavirus pandemic.⁶⁶

Researchers reviewed the evidence on the short-selling bans related to the 2020 COVID-19 shock. The studies suggest that short-selling bans have unintended consequences, including increased volatility and reduced market liquidity, while not achieving their intended objective of stabilizing stock prices and preventing declines in stock prices.⁶⁷

Overall, the evidence indicates that regulators' attempts to ban or restrain short selling have impaired market quality and failed to prevent market declines.

Public reporting of securities lending activity and short sales

Another way the official sector has regulated short sales is through mandating the disclosure of the activity. Disclosure regimes differ across jurisdictions, with some requiring disclosures to regulators and others requiring public disclosures to investors. Public short-selling disclosure requirements refer to regulations that mandate investors and traders to disclose their short positions in stocks or other securities publicly.

Certain types of public disclosure can promote accountability and efficiency and give investors a better understanding of the market's aggregate trading activity. For example, the Financial Industry Regulatory Authority (FINRA) collects short interest data from broker-dealers bi-monthly. This dataset is disclosed to the public and includes information about aggregate short interest in individual securities. FINRA shares the data with the listing exchange in the case of U.S. exchange-listed stocks. FINRA then publishes short interest data for all exchange-listed and OTC equity securities on its Equity Short Interest Data page.⁶⁸ Aggregate positions in each security are available on the seventh business day after the reporting settlement date.

These statistics provide essential context on market sentiment by indicating the intensity of short-selling activity in the market. An increase in short interest may signal that investors anticipate declining securities prices. By contrast, a decrease in short interest may signal that investors expect a rise in securities prices. However, the statistics have limited use because the exchanges report them on a delayed basis.⁶⁹ Statistics from exchanges show that although short interest has risen in recent years, the rise corresponds to proportional increases in the number of shares outstanding. The ratio of shorts to shares outstanding fell in 2023. Between 2014 and 2023, median short interest has been approximately 2 percent of total shares outstanding for S&P 500 stocks and 3.5 percent for Russell 3000 stocks.⁷⁰ That said, short selling has accounted for a higher percentage of trading volume, primarily due to the role of market makers who manage their intraday risk using short positions.

66 "The AMF announces a short selling ban for one month" AMF, March 17, 2020. Available at: <https://www.amf-france.org/en/news-publications/news-releases/amf-news-releases/amf-announces-short-selling-ban-one-month>; Elliot Smith, 17 March 2020). "Short-selling bans sweep Europe in the hope of stemming stock market bleeding." CNBC, March 17, 2020. Available at: <https://www.cnbc.com/2020/03/17/short-selling-bans-sweep-europe-in-hope-of-stemming-stock-market-bleeding.html>.

67 See, Siciliano, Gianfranco and Marco Ventrone. "Banning Cassandra from the Market? An Empirical Analysis of Short-Selling Bans during the Covid-19 Crisis." *European Company and Financial Law Review* 17, no. 3-4 (2020) 386-418. See Travis Whitmore, "The Effectiveness of Short-Selling Bans," *Securities Financial Research*, State Street Associates, 2020. See Baki Cem Sahin and Fatih Kuz's "The effects of short selling on price discovery: A study for Borsa Istanbul, Borsa," *Istanbul Review*, 2020.

68 FINRA Equity Short Interest Data is available at: <https://www.finra.org/finra-data/browse-catalog/equity-short-interest>.

69 See, for example, the NYSE short interest reporting schedule available at: https://www.nyse.com/publicdocs/nyse/data/NYSE_Group_Short_Interest_Calendar.pdf. NASDAQ requires its broker-dealer members to report data on the 15th of each month and publishes the data eight days later. See <https://www.nasdaq.com/market-activity/quotes/short-interest>. Short interest in over-the-counter stocks is available at: <https://otce.finra.org/otce/equityShortInterest>.

70 See Phil Mackintosh, "Short Sellers Aren't as Big as You Think," *NASDAQ Market Makers newsletter*, September 14, 2023. Available at: <https://www.nasdaq.com/articles/short-sellers-arent-as-big-as-you-think>

However, short-selling disclosure requirements that mandate disclosure of individual investor short positions fail to promote accountability and market efficiency. Instead, individual disclosures can distort market activity by discouraging short selling, which impairs market quality by degrading price discovery, reducing liquidity, raising transaction costs, and hampering risk management. Moreover, public disclosure of short sale positions may lead to short squeezes and retaliation against short sellers.

Evidence from the E.U. experience with public short-sale disclosure shows that mandatory short-selling disclosure requirements can reduce liquidity by dissuading short sellers from participating in the market, resulting in wider bid-ask spreads and less trading activity.⁷¹ In 2012, the European Union (EU) adopted a rule requiring investors to “publicly disclose any net short position that reaches a threshold of 0.5% of the shorted stocks’ issued share capital one day after the position was acquired.”⁷² The disclosures contain “the name and identifier of the shorted stock, the identity of the short seller, and the date and magnitude of the position.”⁷³ If a short position reaches a threshold of only 0.2% of the shorted stock’s issued share capital, investors must file a confidential notification with the regulator without public disclosure.

Jank et al. (2021) examine how these disclosure requirements affected investors’ behavior and find “strong evidence that a significant share of positions accumulated just below the disclosure threshold.”⁷⁴ They link this disclosure avoidance to hedge funds’ desire to protect their strategies from reverse engineering by competitors. Significantly, the researchers also document that the disclosure threshold discouraged informed investors, including hedge funds, from increasing their short positions, resulting in stock prices that reflected negative news more slowly than they would have without the policy change. Introducing trade-level disclosure requirements thus inhibited price discovery in the underlying stock.⁷⁵

Another academic study by Duong et al. (2015) also finds that mandatory disclosure of short positions negatively affects market quality.⁷⁶ The authors study the impact of a compulsory market-wide short-selling disclosure policy on the Tokyo Stock Exchange. Under the policy, traders had to report all short positions of more than 0.25% of the shares outstanding of a company to the exchange within 24 hours of acquiring the position. The information was then publicly disseminated within another 24 hours. The authors find that after the disclosure policy came into effect:

“[A]verage short selling slightly declined while investors’ shorting strategies changed significantly in response to the disclosure. Previously highly shorted stocks were shorted less, and shorting activity shifted toward smaller and riskier stocks, suggesting that retail investors became the more likely short sellers. Short sales became more trend-chasing, prices became less informative, and short-term price volatility increased. Overall, the pricing efficiency benefits of short selling declined after the mandatory disclosure policy.”⁷⁷

71 Jones, C., Reed, A., and Waller, W., (2016) “Revealing shorts: An examination of short position disclosures,” *The Review of Financial Studies*, Vol. 29, Issue 12, August 6, 2016, pp. 3278–3320. See also ESMA Report on Trends, Risks and Vulnerabilities (No. 1, 2018) showing that the public reporting threshold reduced price discovery and encouraged market-distorting herding behavior. Available at: https://www.esma.europa.eu/sites/default/files/library/esma50-165-538_report_on_trends_risks_and_vulnerabilities_no.1_2018.pdf

72 Jank et al. (2021), p. 210.

73 Jank et al. (2021), p. 210.

74 Jank et al. (2021), p. 210.

75 The findings from Jank et al. (2021) are consistent with other research on the EU policy change. Studying the same event, Jones et al. (2016) find “that the disclosure regime reduces short interest and the informativeness of prices.” See Charles M. Jones et al., “Revealing Shorts: An Examination of Large Short Position Disclosures,” *The Review of Financial Studies* 29, no. 12, 2016, pp. 3278–3320.

76 Truong X. Duong et al., “The Costs and Benefits of Short Sale Disclosure,” *Journal of Banking and Finance* 53, no. 1, 2015, pp. 124–139 (“Duong et al. (2015)”).

77 Duong et al. (2015) at p. 124.

The authors thus identify the adverse effects of the disclosure policy that result from investors' rational responses to the policy.

In the United States, the SEC finalized Rule 10c-1a on October 13, 2023, which requires securities lenders⁷⁸ to provide the material terms of lending transactions and certain confidential information to a registered national securities association (RNSA) such as FINRA.⁷⁹ The rule also requires that an RNSA make certain information it receives available to the public, along with daily information about the aggregate transaction activity and distribution of loan rates for each reportable security. The data the RNSA requires include identifiers for the security involved, the date and time of the transaction, the amount, and the loan's terms, including pricing and collateral, the platform where the transaction took place, and the type of borrower (e.g., broker-dealer).⁸⁰ The RNSA would be required to create a unique transaction identifier for each transaction and publicly disseminate the information as soon as practicable. Lenders would also have to provide information on modifications to prior transactions, including the date and time of the modification, a description of the modification, and the original loan's unique transaction identifier, if any. At the end of each business day, lenders must provide data on the aggregate amounts of each security available to loan and on loan, which the RNSA must aggregate across lenders and disseminate by the end of the following business day.

FINRA has filed a proposed rule change to adopt the FINRA Rule 6500 Series (Securities Lending and Transparency Engine (SLATETM)). SLATE is a new facility to allow for Covered Securities Loan transaction reporting by Covered Persons and transparency of Covered Securities Loan transactions in accordance with SEA Rule 10c-1a and the FINRA Rule 6500 Series. The Rule 6500 Series outlines the scope of the reporting obligations and relevant definitions, including "Covered Person" and "Covered Securities Loan," consistent with SEA Rule 10c-1a. If approved by the SEC, firms would be required to report Covered Securities Loan information to SLATE pursuant to FINRA's rules beginning Friday, January 2, 2026.

Although the SEC's new rule applies to securities lending activities and not short sales, research shows that market participants could infer changes in the demand for and supply of short sales from granular securities lending data, which the SEC's rule subjects to mandatory disclosures.⁸¹

The SEC claimed the disclosure rule would address asymmetric information between securities lending market participants to justify the rule. They also cited a lack of information on current market conditions, which led to inefficient securities loan prices. The SEC's goal in finalizing the rule was to increase transparency in the securities lending market. The SEC argues that increased transparency would improve price discovery, better risk management, and reduce trading costs. To support its claims, the Commission cites research on the effects of the introduction of TRACE on the corporate bond market and a study from Brazil, claiming "that improving securities lending transparency led to lower fees, increased liquidity, and increased price efficiency."⁸²

78 The Commission uses terms such as "loan" and "lender" to refer to transactions that are not necessarily considered loans. For simplicity, I adopt the Commission's terminology: "Lender, when used in this release, refers to any persons who loan a security on behalf of themselves or another person, including persons that own the securities being loaned ('beneficial owners'), as well as third-party intermediaries, including banks, clearing agencies, or broker-dealers that intermediate the loan of securities on behalf of beneficial owners ('lending agent')." "Final Rule: Reporting of Securities Loans," Release No. 34-98737, SEC, October 13, 2023 ("Final Rule").

79 Proposing Release, pp. 22–23, 41.

80 The specific data elements to be provided to the RNSA include: "(1) the legal name of the security issuer, and the Legal Entity Identifier ('LEI') of the issuer, if the issuer has an active LEI; (2) the ticker symbol, ISIN, CUSIP, or FIGI of the security, if assigned, or other identifier; (3) the date the loan was effected; (4) the time the loan was effected; ... (5) for a loan executed on a platform or venue, the name of the platform or venue where executed; [...] (6) the amount of the security loaned; (7) for a loan not collateralized by cash, the securities lending fee or rate, or any other fee or charges; (8) the type of collateral used to secure the loan of securities; (9) for a loan collateralized by cash, the rebate rate or any other fee or charges; (10) the percentage of collateral to value of loaned securities required to secure such loan; (11) the termination date of the loan, if applicable; and (12) whether the borrower is a broker or dealer, a customer (if the person lending securities is a broker or dealer), a clearing agency, a bank, a custodian, or other person." See Proposing Release, pp. 45, 47.

81 Lauren Cohen et al., "Supply and Demand Shifts in the Shorting Market," *Journal of Finance* 62, no. 5, 2007, pp. 2061–2096.

82 "Proposed Rule: Reporting of Securities Loans," Release No. 34-93613, SEC, November 18, 2021 ("Proposing Release"), pp. 129–130.

The Commission also claims that “reduced costs to short selling would benefit investors by enabling them to profitably engage in more fundamental research,” citing academic research that purportedly “indicates that when short selling costs diminish, investors will do more fundamental research because it is easier to trade on their information if they uncover negative information.”⁸³

Under its governing statutes, the SEC must consider the impact of its regulatory actions on efficiency, competition, and capital formation when determining whether to exercise its rulemaking authority. When the securities lending disclosure rule was first proposed, required disclosures would have been available to the market within 15 minutes of transaction completion. In considering public comment on this proposed requirement, the SEC revised the requirement for publishing deal details 15 minutes after the completion of a transaction. In the final rule, data will be published the next morning, and more granular data will be published 20 business days after the transaction is reported.

Public commenters had raised concerns that the rule, as initially proposed, might facilitate copycat strategies and front-running of positions. For example, if granular data on securities loans become available to the market within 15 minutes of the transaction, and the data enable investors to predict the extent of short selling pressure on each security, as the Commission argues and as documented by Cohen et al. (2007), short-selling strategies that take time to execute are less likely to be profitable. The market may be able to anticipate the intentions of the trading strategies and copy them.⁸⁴

The SEC Securities Lending Rule has been challenged in Federal Court. On October 7, 2024, the United States Court of Appeals for the Fifth Circuit heard arguments in the matter of the *National Association of Private Fund Managers; Managed Funds Association; Alternative Investment Management Association v. Securities and Exchange Commission*. The Court had not decided the case as of the publication date of this paper.⁸⁵

The Commission recognized that this so-called copycat risk could “ultimately degrade price efficiency” in its 2014 study of the feasibility, benefits, and costs of “requiring the reporting of short sale positions in publicly listed securities in real-time.”⁸⁶ Specifically, the Commission recognized that “[t]o the extent that copycat traders could detect fundamental short selling in [the granular short sale data], they could mimic fundamental short sellers and profit from their research without incurring the cost of that research. Such activity could reduce the profits available to fundamental traders because copycat trading might move prices before fundamental traders could fully build their planned positions.”⁸⁷ Even if the anonymous nature of the proposed disclosures offers some protection against copycat risk, market participants could use sophisticated pattern recognition software based on machine learning techniques to detect other market participants’ trading strategies.⁸⁸

⁸³ Proposing Release, pp. 136–137.

⁸⁴ Cohen et al. (2007).

⁸⁵ A recording of the oral arguments for this case can be found at the following link: https://www.ca5.uscourts.gov/OralArgRecordings/23/23-60626_10-7-2024.mp3.

⁸⁶ “Short-Sale Position and Transaction Reporting: As Required by Section 417 of the Dodd-Frank Wall Street Reform and Consumer Protection Act,” SEC, June 5, 2014 (“Short Sale Position and Transaction Reporting”), p. 51.

⁸⁷ Short Sale Position and Transaction Reporting, p. 51.

⁸⁸ “Concept Release: Equity Market Structure,” Release No. 34-61358, Federal Register 75, no. 13, January 21, 2010, pp. 3594–95.

Even under the disclosure regime existing before the SEC finalized its new rule, copycat trading was a concern. In a 2017 release on its machine learning capabilities, J.P. Morgan noted that its “quant team used global data to determine which stocks had high lending rates, assuming strong demand was being driven by short selling” and reported that it subsequently successfully implemented an approach to “[follow] the short interest herd.”⁸⁹

In formulating its securities lending disclosure rule, the SEC argued that improved information access to securities lending data would improve price discovery in the securities lending market and might increase price efficiency by allowing a broader section of investors to learn from and trade based on signals obtained from the securities lending market. However, commenters countered that the proposed rule’s effect on pricing efficiency would be the opposite. The disclosure may reduce incentives for short sellers to conduct fundamental research on companies and reduce the resources allocated to producing information. As a result, investors may have inferior information and observe less informative security prices due to the proposed rule.⁹⁰ Many academic studies demonstrate that if the operation of the market for short selling is impaired, the result is less informationally efficient prices.⁹¹

The SEC claims that its new securities lending disclosure rule would reduce the cost of borrowing securities and improve efficiency in the securities lending market, reducing the cost of short selling. The Commission also asserts that lowering the cost of borrowing securities may increase investors’ returns by facilitating investment, hedging, and potentially market-making strategies. However, commenters questioned the evidence the SEC cited to support this assertion.

Proponents of public disclosures of short sales often argue that increasing such disclosures can reduce abusive trading. However, public disclosure of detailed transaction data can also facilitate abusive trading. Public disclosure of short positions may subject market participants to the risk of a short squeeze. A short squeeze is when demand pressure pushes prices upward to force short sellers out of their positions. Short sellers must add cash to their margin accounts as prices rise or close their positions.⁹² In the release proposing the short-selling rule, the SEC acknowledged that investors could use the provision of this information to organize a short squeeze.

The hypothesis that knowledge of short positions could lead to an attempted short squeeze is not purely hypothetical. For example, in January 2021, investors on Reddit executed a coordinated investment strategy to force a short squeeze in stocks that were identified as heavily shorted, resulting in losses to investors with short positions in those stocks.⁹³

89 “Alternate Stock Lending with Unconventional Data,” J.P. Morgan, June 23, 2017.

90 The Commission notes that the “increase in securities lending information [caused by the proposed rule] would also result in costs in the form of lost revenue for current providers of commercial securities lending data.” Proposing Release, p. 132. Faced with lower revenues, these providers, which include IHS Markit (formerly Data Explorers) and FIS (formerly SunGard), may alter their available product offerings in response to the proposed disclosure requirements. Letter from Donal Smith (Data Explorers) to Elizabeth Murphy (SEC), “Dodd-Frank Financial Reform Act: Section 417(a)(2) Short Sale Reporting Study, RE: File Number 4-627,” June 23, 2011.

91 Charles M. Jones et al., “Revealing Shorts: An Examination of Large Short Position Disclosures,” *The Review of Financial Studies* 29, no. 12, 2016, pp. 3278–3320 at p. 3299 (“We find that price delay increases after the beginning of the disclosure regime. ... Since the previous literature suggests that short sellers increase price informativeness, the reduced presence of short sellers indicated by the table is consistent with the reduction in price informativeness.”).

92 “Staff Report on Equity and Options Market Structure Conditions in Early 2021,” SEC, October 14, 2021, p. 25. (“A short squeeze might occur when an event triggers short sellers en masse to purchase shares to cover their short positions. For example, if the price of the shorted stock rises, short sellers face margin calls requiring them either to post additional collateral or to exit their position. Short sellers that cover their positions by buying the underlying stock would cause additional upward price pressure on the stock, which could force other short sellers to exit their positions, adding further upward price pressure, and so on.”)

93 This episode was described in a memorandum from the Committee on Financial Services of the U.S. House of Representatives: “In January 2021, retail investors on social media site Reddit’s ‘WallStreetBets’ subchannel (‘subreddit’) collectively executed an investment strategy to induce a short squeeze in stocks such as GameStop, AMC, and KOSS, as well as other securities they identified as being heavily shorted by hedge funds. Meaning social media users collectively drove the stock prices up, forcing short sellers who bet the stock price would go down to purchase shares at an increased price. ... Initially, this squeeze led to heavy losses for some short sellers, particularly hedge funds, and led to substantial financial gain for some retail investors.” Memorandum from FSC Majority Staff to Members, Committee on Financial Services, “February 18, 2021, Full Committee Hearing entitled, ‘Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide?’” February 15, 2021, p. 1.

Investment funds typically devote significant resources to enhancing their reputation with investors. Public disclosure of short sales by those funds (e.g., pension funds, endowments, and foundations) can pose reputational risk by creating adverse publicity. Public disclosure requirements for short sales could lead fund investors to avoid investment vehicles engaged in short selling and the associated reputational risk. As a result, investors may lose the risk management benefits of short sales over the long run, eroding those investors' returns.

Public disclosure of individual short positions could also facilitate retaliation. Even under current disclosure rules, there was retaliation against short sellers in the form of short squeezes (e.g., the GameStop episode), allegations of price manipulation in instances of significant price declines in the market, risk of lawsuits, and harassment. More detailed disclosure of securities lending market activity increases the prospect of retaliation directed at individual short sellers.

Public disclosure of short positions may also allow securities issuers to exclude investors engaged in short selling from some discussions with investors, making short sellers less informed about a company's prospects.

IV. Conclusions

Short selling contributes to market quality by facilitating price discovery, liquidity, and risk management. Academic research has consistently shown that short sellers play a necessary role in well-functioning markets by uncovering potential market abuses, such as price manipulation and fraud, and ensuring the efficient adjustment of prices to the latest information. Thus, short selling can deter market abuse that drives prices above their fundamental value. Securities lending also benefits ordinary investors who hold shares through mutual funds, pension funds, or brokerage accounts and those who collect revenue by participating in securities lending programs.

The empirical evidence on the effects of government bans and limits on short selling, such as through public reporting of short positions or securities lending activity, also shows that such regulatory actions degrade market quality and do not produce the intended results, preventing price declines. These findings are consistent with evidence of how short selling enhances market quality. Several peer-reviewed academic studies provide evidence demonstrating that impairments to the operation of the market for short selling led to less informationally efficient prices, reduced liquidity, less efficient risk management, higher trading costs, and inhibited capital formation.

Appendix 1: alternative ways to gain short exposure

Selling shares short is only one example of market participants getting short exposure. Because the forces of arbitrage link together markets, market participants can use other instruments to replicate the payoffs they would receive by taking a short position without short-selling a security. The way market participants choose to get this exposure depends on the short seller's creditworthiness, risk-management considerations, the desire for customized exposure, and all-in trading costs. This appendix describes alternative ways an investor can obtain a short exposure: an equity option, a futures contract, a swap contract, or an inverse ETF.

Option contracts

One way for an investor to get short exposure is through the equity options market. In the United States, different venues list options on stocks or stock indices. Dealers arrange stock option transactions through a decentralized network called the over-the-counter market.

A stock option is a contract that provides the right to buy or sell stock for a limited time at a specified price. Stock options come in two primary forms: call option contracts and put option contracts. A call option gives the contract owner the right to buy stock at a specific price, with that right lasting until a particular date. Conversely, ownership of a put option gives the owner the right to sell stock at a specified price, lasting until a specific date. For every option contract, there is a buyer and a seller. In the case of a call option, the seller (known as the option writer) receives a payment from the buyer (known as the option premium) and gives the buyer the right to buy the stock at a specific price (known as the exercise or strike price) for a specified period.

Similarly, the seller of a put option receives payment from the buyer and gives the buyer the right to sell stock to the option seller at a specific price for a specified period.

The equity options market allows market participants to manage risk and expected payoffs from trading stocks. For example, if a trader expects the price of stock XYZ to fall, the trader could purchase a put option instead of shorting the stock. If the stock price declines, the put option becomes more valuable and can be sold at a profit or exercised. By exercising the put option, the put option holder sells the stock at the exercise price specified in the put option contract. A trader could also express the view that the stock price will fall by selling a call option. If the trader is correct, he can keep the payment received from the call option buyer.

If option prices are not aligned with the underlying stock prices, profitable arbitrage opportunities allow market participants to earn a virtually risk-free return. Well-established relations exist between the prices of call options, put options, and the underlying stock, called put-call parity. Violations of put-call parity mean that the relative prices of puts, calls, and underlying stock are not correctly aligned and permit an arbitrage opportunity.

Futures contracts

Futures contracts are standardized legal agreements to buy or sell a specific underlying asset at a particular time in the future at a price determined when a market participant initiates the position. Investors worldwide use futures contracts to manage price risk or express a view about the future price of an asset, either in absolute terms or in relation to the other assets' prices. The futures contract's terms, except for its price, are standardized in terms of the specifications of the underlying asset, the contract size, and the contract expiration and settlement terms. Users of futures contracts can typically exit a position quickly before the contract expires with an offsetting transaction. At expiration, an investor can settle a contract with cash based on a reference price or physical settlement by delivering or taking delivery of the underlying commodity.

The party agreeing to take delivery by buying the underlying asset or paying the reference price at settlement is said to have a long position. The long position's value increases if the futures price rises above the price at which the investor initiated the futures contract. The party agreeing to deliver by selling the underlying or accepting the reference price at settlement has a short position. By contrast, the short position's value increases if the futures price falls below the price at which the investor initiated the futures contract. Investors trade futures contracts on many assets, including stock indices, agricultural commodities, energy products, metals, foreign exchange, interest rate products, and other assets, such as credit indices, digital assets, or even the outcomes of certain events like the weather.

Swap contracts

A swap contract is an agreement between two or more parties to exchange cash flows over a fixed period. It is a derivative contract between large, sophisticated investors (or "eligible contract participants" in financial market regulations) on a principal-to-principal, privately negotiated basis. Swap contracts trade in an over-the-counter market. Swap transactions are facilitated by dealers who stand ready to accept either side of a transaction (for example, pay-fixed or receive-fixed), depending on the customer's demand.

There are five main types of swaps: interest rate swaps, currency swaps, equity swaps, commodity swaps, and credit swaps. Swaps are plain vanilla or flavored. Certain plain vanilla swaps, like the standardized contract terms in an organized exchange, can be highly standardized. With flavored swaps, the dealer customizes the swap contract's terms to meet the needs of the swap's counterparties.

Firm-specific swaps include credit default swaps and equity swaps. The payoff to a credit default swap relates to the credit characteristics of a specified issue or issues of a corporation's traded debt. The credit characteristics of this debt are called reference credit. In a credit default swap, two parties enter a contract whereby one party, called the protection buyer, makes a fixed periodic payment to an opposite counterparty, the protection seller. The protection seller does not pay the protection buyer unless a specified credit event occurs. Credit events in credit default swap contracts include failure to make payments when due, bankruptcy, debt restructuring, a change in an external credit rating, or rescheduling payments for a specified reference credit. The payment size is often linked to the decline in the market value of the reference credit resulting from the credit event.

A trader who expects that the prospects of a corporation may decline could express that expectation by becoming a protection buyer of the corporation's reference credit. If the trader's expectations are correct and an adverse credit event becomes more likely, the price of credit protection rises. The trader can profit from this deterioration in the corporation's creditworthiness by selling their position in the credit default swap to another market participant willing to pay a higher price for credit protection. Buying credit protection reflects a view about a corporation's prospects that are economically similar to taking a short position in the corporation's stock or buying a put option. The 2015 movie *The Big Short* featured a discussion of credit default swaps.⁹⁴

⁹⁴ The movie *The Big Short* was based on a book by the same name by Michael Lewis: *The Big Short: Inside the Doomsday Machine*, W. W. Norton & Company, New York: 2011

In an equity swap, the counterparties agree to exchange payments based on the performance of a stock or a basket of stocks. One party (called the fixed-rate payer or floating rate receiver) agrees to pay a fixed amount periodically in exchange for floating, or variable, periodic payments from the swap counterparty (called the floating-rate payer or fixed rate receiver) that depends on the stock return over the period. The floating rate receiver is the party that effectively shorts the stock: If the stock's return is negative, the floating rate payer pays the floating rate receiver an amount specified by a formula in the swap contract. Variations of this basic contract can be tailored to the contracting parties' specific preferences.

Inverse exchange-traded funds

An inverse exchange-traded fund, or inverse ETF, seeks to deliver a daily return that equals the return of an underlying index multiplied by minus one. If the S&P 500 rose by 1 percent on a given day, the inverse ETF on the S&P 500 would return -1 percent. Moreover, an inverse ETF can be leveraged and inverse, which means it seeks to deliver daily returns that are a multiple of the underlying index's daily return multiplied by minus one. For example, if the S&P 500 returned 1 percent on a given day, the 2X inverse fund's objective would be to achieve a return of -2 percent.

An inverse ETF provides short market exposure for investors who might otherwise be unable to take short positions or prefer an inverse product. These products appeal to investors who seek to establish short positions based on their forecast of price changes or manage risk from existing exposures.