



## The good news in short interest<sup>☆</sup>

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### ABSTRACT

Stocks with relatively high short interest subsequently experience negative abnormal returns, but the effect can be transient and of debatable economic significance. In contrast, relatively heavily traded stocks with low short interest experience both statistically and economically significant positive abnormal returns. These positive returns are often larger (in absolute value) than the negative returns observed for heavily shorted stocks. Thus, the positive information associated with low short interest, which is publicly available, is only slowly incorporated into prices, which raises a broader market efficiency issue. Our results also cast doubt on existing theories of the impact of short sale constraints.

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## 1. Introduction

On any given day, there are many relatively large and liquid stocks that could be easily and cheaply shorted, but nonetheless have few or no shorted shares (i.e., little or no short interest). The short interest in a stock is often viewed as a measure of heterogeneity of investor opinion. If this is the case, an easily shorted stock that is completely avoided by short sellers suggests unanimity among market participants that the stock is, at a minimum, not overvalued. An additional implication is

that short sellers do not possess significant private negative information about the stock.

Unlike previous studies on short selling, our goal in this paper is to investigate whether the absence of short selling is informative about future returns. Using NYSE, Amex, and Nasdaq short interest data from 1988 through 2005, we find that portfolios of lightly shorted stocks have economically large and statistically significant *positive* abnormal returns. These returns are often larger (in absolute value) than the negative returns on portfolios of heavily shorted stocks, and they are robust to issues such as portfolio weighting, the timing of portfolio formation, the risk-adjustment procedure, listing venue, and the inclusion/exclusion of recent new listings or the 1998–2000 period.

Our results have significant implications for well-known models of the impact of short sale constraints on asset prices such as Miller (1977), Diamond and Verrecchia (1987), and Hong and Stein (2003). In these models,

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short sale constraints inhibit the incorporation of negative information in stock prices, but, because there are no constraints to going long, there is no such barrier to the incorporation of positive information or opinion. This assumption is central in, for example, [Hong and Stein's \(2003\)](#) explanation of why markets melt down, but don't melt up. However, our results show that both positive and negative information apparently known to short sellers is not incorporated in stock prices, casting doubt on the critical asymmetry between the way good and bad news is revealed to market participants.

Overall, we find evidence that short sellers are able to identify overvalued stocks to sell and also seem adept at avoiding undervalued stocks. Of course, our results raise the broader question of why prices only slowly adjust to reflect information from public short interest data, thereby joining a growing list of related anomalies. We have no explanation for this apparent market efficiency failure, but we can observe that the powerful "barriers to arbitrage" argument of [Shleifer and Vishny \(1997\)](#) does not seem to apply because the abnormal returns we identify can be captured by simple buy-only strategies.

The remainder of this paper proceeds as follows. Section 2 reviews the relevant short sale literature. Section 3 presents the data. Section 4 discusses the research methods and the baseline results. Section 5 presents additional analyses and robustness results. Section 6 concludes.

## 2. Background

On the theory side, the literature on short selling focuses primarily on the implications of short sale constraints when investors have heterogeneous beliefs and/or information. In essence, binding short sale constraints inhibit the incorporation of negative information in prices. But, because there is no barrier to going long, positive information is not withheld. In [Miller \(1977\)](#), the result is that stock prices are, on average, too high because stocks tend to be held by those investors with overly positive views. In a recent review, [Rubinstein \(2004\)](#) traces this argument to [Williams \(1938\)](#), and he refers to it as the Williams-Miller hypothesis. [Hong and Stein's \(2003\)](#) model is similar in spirit, and they show how binding short sale constraints can promote market crashes and can also explain various observed features of crashes such as the fact that they sometimes occur in the absence of sufficiently significant new public information.

In [Diamond and Verrecchia \(1987\)](#), the effect is more subtle. Rational investors are aware that, due to short sale constraints, negative information is withheld, so individual stock prices reflect an expected quantity of bad news. Prices are correct, on average, in the model, but individual stocks can be overvalued or undervalued. Two more recent studies, one with a theoretical model ([Gallmeyer and Hollifield, 2008](#)) and one with a series of experiments ([Haruvy and Noussair, 2006](#)), show that short sale constraints can cause both overvaluation and undervaluation.

Empirical research on short selling has historically focused on the information content in short interest (or the change in short interest) as measured by the short interest ratio (SIR), which is a monthly snapshot of the percentage of outstanding shares sold short. There are three competing and contradictory arguments. The first one, often attributed to conventional Wall Street wisdom ([Epstein, 1995](#)), is that short interest represents future demand because of position-closing, so a relatively high short interest is a bullish signal. At the other extreme, if, as in [Figlewski \(1981\)](#), heavy shorting represents wide dispersion of beliefs, then the Williams-Miller hypothesis suggests that stocks with a high SIR might be overvalued. Finally, [Brent, Morse, and Stice \(1990\)](#) note that short selling can arise for a variety of reasons. Arbitrage operations involving convertible bonds, options, pending mergers, and indexes are some examples. Other reasons include hedging, tax-related trades, and relative value trades. None of these reasons is necessarily related to investor opinion about overvaluation, so there is no reason to believe that the SIR would be informative about future returns.

Overlaying these arguments is a basic market efficiency question. The short interest data used in most studies are public and available on a monthly basis. Nonetheless, early studies such as [Seneca \(1967\)](#) and [Figlewski \(1981\)](#) find evidence that stocks with high short interest subsequently underperform. More recent studies such as [Asquith and Meulbroek \(1995\)](#) and [Desai, Ramesh, Thiagarajan, and Balachandran \(2002\)](#) also find that high SIR stocks have significant negative abnormal returns. Similarly, [Senchack and Starks \(1993\)](#) find that stocks with large increases in short interest underperform, particularly those that do not have exchange traded options (the presence of which would presumably reduce the impact of short sale constraints).

In other recent research, short interest has been studied in conjunction with measures that attempt to identify stocks subject to short sale constraints or wide divergence of opinion. [Chen, Hong, and Stein \(2002\)](#) use mutual fund holdings as a proxy for breadth of ownership (and thus, availability of the stock in the lending market). They find that reductions in breadth are associated with lower future returns. [Boehme, Danielsen, and Sorescu \(2006\)](#) use a variety of measures for heterogeneity of investor opinion (e.g., analyst recommendations, return volatility) and find strong support for Miller's hypothesis on how short sale constraints simultaneously with divergence in opinion are linked to overpricing.

Other recent studies explore the relationship between shorting and subsequent performance. [Asquith, Pathak, and Ritter \(2005\)](#) find that stocks with high SIR and low institutional ownership (and thus, potentially harder to locate) underperform in equal-weighted portfolios, but the underperformance essentially vanishes when value-weighting is used. Using proprietary data, [Boehmer, Jones, and Zhang \(2008\)](#) examine daily short sale flow executed at the NYSE over the period January 2000 through April 2004. They find that heavily shorted stocks significantly underperform lightly shorted ones (over a 20-day holding period), and they argue that the difference far exceeds

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