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Short-sale constraints, information acquisition, and asset prices ☆

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Abstract

During financial crises, financial market regulators often restrict short-selling to support prices and curb volatility. However, evidence suggests that short-selling bans during the turmoil in financial markets in 2007–2009 failed to achieve regulators' goals. We analyze a model of costly private information acquisition and asset pricing under short-sale constraints to examine a possible cause of this failure. We show that the constraints increase return volatility by adversely affecting the production of private information. When investors are highly risk averse or are holding highly correlated risky assets, the distortion in private information production arising from imposing short-sale constraints leads to undervaluation, implying that imposing short-selling bans during economic crises not only fails to curb volatility but also may fail to support prices.

JEL classification: G11; G12; G14

Keywords: Return volatility; Short-selling bans; Information production; Asset prices; Rational expectations

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1. Introduction

In response to the financial crisis of 2007–2009, financial market regulators in many countries imposed restrictions on short-selling activities to support prices and curb volatility. However, evidence suggests that these restrictions failed to achieve regulators' goals. Existing theories of trading constraints are ambiguous as to whether this regulatory response can generally accomplish these intended goals. Given the widespread use of this regulatory intervention, more definitive theoretical insights on the effects of short-sale constraints on asset prices would be of interest to both academics and financial market regulators. Toward that end, in this paper, we analyze a model of costly private information acquisition and asset pricing under short-sale constraints and provide a rationale for why imposing short-selling restrictions may be a counterproductive policy during financial crises.

In our model, rational investors collect costly private information about the payoff of a risky asset before investing in it. We show that imposing short-sale constraints reduces investors' incentives to collect private information. This in turn makes the price less informative and more volatile, causing long investors to scale down their demands because of the higher perceived risk. The price of the risky asset can drop because the scaling down of long investors' demands can dominate the truncation of demands of investors with negative information. Short-sale constraints affect asset prices through the distortion of private information collection, particularly when investors are highly risk averse or are holding highly correlated risky assets (or both), conditions that are often considered to be more likely to hold during economic downturns. This finding leads to the prediction that short-sale constraints can both increase volatility and fail to support prices in economic downturns. Thus, our model demonstrates that imposing short-selling restrictions may be ineffective at accomplishing some of the intended policy goals because of the previously unrecognized deleterious effects of these restrictions on information production.

In our model, an infinite number of risk-averse investors trade two assets: a risk-free asset and a risky asset. Investors are endowed with a heterogeneous number of shares of a nontradable asset, and they obtain independent private signals regarding the risky-asset payoff. Each investor chooses the precision of his private signal before making his investment decision and learning his endowment of the nontradable asset. Investors trade in the market to speculate on their private information and to share the risk arising from the heterogeneous endowment of the nontradable asset. In this framework, we examine the effects that short-sale constraints have on the equilibrium precision of private signals and the equilibrium expected return and volatility.

Our model contrasts with the prior literature by relaxing the unrealistic assumption that the precision of private signals is exogenously given and unaffected when a short-sale constraint is imposed. If precision is held fixed, short-sale constraints in our model always bias the risky-asset price upward, causing overvaluation, and they have no effect on the volatility of the risky-asset return. Constraints generate overvaluation because investors with negative signals take no position in the risky asset and investors with positive signals do not change their positions in the risky asset. The volatility is unaffected because, as we show, short-sale constraints do not affect price informativeness and, therefore, return volatility if one fixes the precision of private signals.

When the precision of private signals is endogenously chosen, we show that short-sale constraints can significantly reduce the marginal value of information, which reduces the equilibrium production of private information regarding the risky asset. The reduction in equilibrium precision affects both return volatility and the expected rate of return of the risky asset. In particular, we show that imposing a short-sale constraint always increases return volatility. The decrease in equilibrium precision caused by short-sale constraints has two opposing effects on volatility in