

Alternative Investing

Securities Lending, Shorting and Pricing

November 1, 2002

In this paper, we provide a framework for the price impact of the practice of shorting. Taking into account the potentially time-consuming nature of establishing short positions, we captured the price effect of more and more agents expressing opinions via trading, and how lending fees are determined and incorporated into the price.

We show that, in some special cases — characterized by a small float of the asset relative to the demands for shorting and buying the asset, a large discrepancy between the beliefs of optimists and pessimists regarding the company's value, or high lender bargaining power — the effect can be strong enough to push the price of the asset above the valuation of the most optimistic investors.

Further, the results show that the common wisdom that easier access to shorting reduces the price need not be true. We also illustrate how negative stub values can arise from the effect of lending fees. While we concentrate on the price behavior of recently offered equities, the results can be reinterpreted in the context of repo specials, convenience yields and the valuation of corporate and government bonds, as well as commodities. One can also investigate "bubbles" within this framework.

One could easily extend our model to incorporate partial information revelation over time, the updating (and perhaps convergence) of beliefs, new agents arriving over time, disagreement among agents over the implications of new information, and fluctuations in the float and in the ease with which agents of various types are located.

This document is not intended to, and does not relate specifically to any investment strategy or product that AQR offers. It is being provided merely to provide a framework to assist in the implementation of an investor's own analysis and an investor's own view on the topic discussed herein.

This document has been provided to you solely for information purposes and does not constitute an offer or solicitation of an offer or any advice or recommendation to purchase any securities or other financial instruments and may not be construed as such. The factual information set forth herein has been obtained or derived from sources believed by the author and AQR Capital Management, LLC ("AQR") to be reliable but it is not necessarily all-inclusive and is not guaranteed as to its accuracy and is not to be regarded as a representation or warranty, express or implied, as to the information's accuracy or completeness, nor should the attached information serve as the basis of any investment decision. This document is not to be reproduced or redistributed to any other person. The information set forth herein has been provided to you as secondary information and should not be the primary source for any investment or allocation decision. Past performance is not a guarantee of future performance. Diversification does not eliminate the risk of experiencing investment losses.

This material is not research and should not be treated as research. This paper does not represent valuation judgments with respect to any financial instrument, issuer, security or sector that may be described or referenced herein and does not represent a formal or official view of AQR. The views expressed reflect the current views as of the date hereof and neither the author nor AQR undertakes to advise you of any changes in the views expressed herein.

The information contained herein is only as current as of the date indicated, and may be superseded by subsequent market events or for other reasons. Charts and graphs provided herein are for illustrative purposes only. The information in this presentation has been developed internally and/or obtained from sources believed to be reliable; however, neither AQR nor the author guarantees the accuracy, adequacy or completeness of such information. Nothing contained herein constitutes investment, legal, tax or other advice nor is it to

be relied on in making an investment or other decision. There can be no assurance that an investment strategy will be successful. Historic market trends are not reliable indicators of actual future market behavior or future performance of any particular investment which may differ materially, and should not be relied upon as such. Diversification does not eliminate the risk of experiencing investment losses.

The information in this paper may contain projections or other forward-looking statements regarding future events, targets, forecasts or expectations regarding the strategies described herein, and is only current as of the date indicated. There is no assurance that such events or targets will be achieved, and may be significantly different from that shown here. The information in this document, including statements concerning financial market trends, is based on current market conditions, which will fluctuate and may be superseded by subsequent market events or for other reasons.