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journal homepage: www.elsevier.com/locate/jempfinDo short sellers exploit industry information?[☆]Zsuzsa R. Huszár^{a,b,*}, Ruth S.K. Tan^a, Weina Zhang^{a,b}^a NUS Business School, at the National University of Singapore (NUS), Mochtar Riady Building, 15 Kent Ridge Drive, 119245 Singapore^b Risk Management Institute (RMI) and the Institute of Real Estate Studies (IRES) at NUS, Singapore

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ABSTRACT

This study provides new evidence about short sellers' trading strategies by showing that short sellers exploit firm information in combination with industry information in their trades. In industries with the highest aggregate shorted values, the most-shorted stocks earn about 1.535% lower abnormal returns than other highly shorted stocks in less shorted industries over the next six months. These results are likely driven by short sellers' preference for complex industries with the highest profit potential. We also show that the aggregate shorted value at the industry level is able to predict important industry shifts, such as declines in sales and increased competition. Overall, our results suggest that short sellers help to reduce information complexity and improve economic efficiency at the industry level.

"Investors are using Australia's stock market to bet that an iron-ore rout has further to run. Two of the five most-shorted companies in the nation's benchmark equity index are producers of the commodity, according to data compiled by Markit Group Ltd. and Bloomberg. Bearish bets on Atlas Iron Ltd. (AGO) this month hit a record, the data show. A gauge of iron-ore prices in China tumbled 41 percent this year to the lowest since 2009, falling below \$80 a dry ton this week."

Haigh and Stringer, Bloomberg, September 25, 2014.

1. Introduction

Conventional wisdom in finance suggests that stock returns are influenced by three sources of information: macroeconomics, industry, and firm-specific information. The extant asset pricing literature has mainly focused on macroeconomic news (such as interest rates, recession, and, more recently, the global financial crisis) and firm-specific information (such as earnings news, mergers and acquisitions, financial statement revision, CEO death, and fraud). Unlike macroeconomic and firm-specific news, industry-specific news releases are not issued on a regular basis. This lack of systematic information availability hinders the analysis of the relation between industry information and stock returns.

A number of studies use aggregate industry stock returns to proxy for industry-level information. For example, [Makarov and](#)

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* Corresponding author at: NUS Business School, at the National University of Singapore (NUS), Mochtar Riady Building, 15 Kent Ridge Drive, 119245 Singapore.

E-mail address: bizhzz@nus.edu.sg (Z.R. Huszár).

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Papanikolaou (2007) create four factors from U.S. industry-level returns to predict market returns. Hong et al. (2007) document a strong relation between industry portfolio returns (such as retail, services, commercial real estate, and the metal and petroleum industries) and aggregate market returns in the U.S. and in eight other countries. Hoberg and Philips (2010) use industry returns to proxy for industry booms and busts to study the externality of industry competition on firms' cash flow and stock returns.

The limitations of using industry returns to proxy for industry information are twofold. First, because the above-mentioned studies use stock returns as both dependent and explanatory variables (with some lags), the statistical relation found has provided limited insight into the underlying economic mechanisms that drive the relation between industry-level stock returns and market returns. Second, stock returns are volatile in nature, which is in contrast to the slow-changing nature of an industry. For example, during the Industrial Revolution, the transition to new manufacturing processes took about 80 years, from 1760 to 1840. The new technological advancements may result in new industries (such as the information technology industry) or foster major restructurings in traditional industries (see, e.g., Kliesen, 1993; Foster et al., 2006). While the adaptation of new technologies is faster nowadays, it is still not instantaneous. Hence, a better, non-return based, measure is needed to capture gradual shifts and structural breaks at the industry level.¹

In this study, we introduce a new measure of industry information namely, the aggregate industry shorted value. We suggest this measure based on short sellers' trading activity because these traders are generally considered to be relatively informed, either because they have access to private material information (Anderson et al., 2012) or because of superior information processing skills (Engelberg et al., 2012). Furthermore, anecdotal evidences suggest that short sellers target different industries at times. For example, George Soros, a well-known short seller, was reportedly engaged in the large-scale shorting of IT firms in the early 2000s. Hauck and Tsang (2007) report that in the later part of the first decade of the new millennium, short sellers targeted firms in the renewable energy industry because of increased competition, ongoing restructuring, and faltering government support for low-polluting industries. More recently, short sellers have shifted into mining- and oil-related industries as global iron ore and oil prices declined in 2014 (Haigh and Stringer 2014). Hence, we believe that short sellers' industry concentration is likely to convey new material information about the industry. Our proposed industry trade-based measure not only captures the shorted value of each listed firm but is also influenced by the number of firms that are shorted in the industry. Both pieces of information are valuable in the information production process if short sellers indeed possess valuable information about a particular industry.

To motivate the validity for our measure, we first discuss the determinants of the industry aggregate shorted value and explain why we rely on a proxy that captures the capital exposure of short sellers to a specific industry instead of the traditional short interest ratio.² We show that industries with the highest aggregate shorted value are informationally more complex in that they are associated with greater diversity in past performance, growth opportunities, and firm size. Moreover, our measure is significantly and positively related to the number of firms in the industry and it is constructed to focus on larger and growing industries with significant diversity in investment opportunities and future profitability. We suggest that short sellers position themselves in industries where they are likely to maximize profits through their superior information processing skills.

Second, we explore short sellers' superior industry information using Fama–MacBeth cross-sectional return analyses and portfolio approach. In the Fama–MacBeth regression framework, we test the information content in industry shorting in conjunction with firm-level shorting and show that highly shorted stocks from industries with high aggregate shorting earn 1.535% lower abnormal returns over the next six months than other highly shorted stocks. In the portfolio analysis, we further confirm these results and show that the highest abnormal returns are associated with hedge portfolios combining long position in lightly shorted stocks and short positions in highly shorted stocks in industries with the most active short sellers' presence (i.e., industries with the highest aggregate shorted value). These portfolios are established using conditional sorting to ensure the even distribution of stocks across the portfolios by first sorting stocks into six industry groups based on the industry aggregate shorted value. In the second step, we sort stocks within each sextile industry group into six subgroups according to the firm-level short interest ratio (SIR). Within the most-short industries, we find that the long-short portfolio combining low SIR and high SIR stocks earn value-weighted returns of –5.897% in the next six months compared to –3.311% in the least-short industries. Thus, we complement previous studies by reconfirming that firm-level shorting carries material information and provide new insights into short sellers' strategies by documenting that there is an additional industry component in short sellers' private information.

Last, we provide some economic insights into the information content revealed by short sellers, by testing whether our industry measure is able to predict future industry shifts. Specifically, we examine the future changes in value-weighted average relative sales and firm concentration at the industry level in relation with our industry shorting measure. We find that our aggregate industry shorted value predicts significant decline in sales and increase in competition over the next year. These findings are important as they suggest that aggregate short selling promotes better economic efficiency at the industry level.

Our study makes two contributions to the literature. First, we propose a new measure of industry information based on the industry preferences of informed traders—that is, short sellers. This measure can be a convenient industry level information proxy for retail investors to overcome their information disadvantage. Second, we find that short sellers' information advantage in specific industries benefits those industries by reducing information complexity and improving the industry's economic efficiency. To our

¹ A United Nations report (UN, 2009) refers to the following definition for structural changes: “the different arrangements of productive activity in the economy and different distributions of productive factors among various sectors of the economy, various occupations, geographic regions, types of product, etc ...” While there is extensive literature on industry growth (e.g., Beck et al., 2000; Fogel et al., 2008; King and Levine, 1993; Rajan and Zingales, 1998), those studies generally do not specifically examine industry information over time and pay little attention to industry restructuring in a developed-country setting.

² The short interest ratio (SIR) as the number of shares shorted relative to shares outstanding has been widely used to capture the information content from short sellers (for example, Desai et al. 2002)

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