Accounting, Organizations and Society xxx (2018) 1–15

Contents lists available at ScienceDirect

Accounting, Organizations and Society

journal homepage: www.elsevier.com/locate/aos

# Informed traders' performance and the information environment: Evidence from experimental asset markets

Lucy F. Ackert [a, *], Bryan K. Church [b], Ping Zhang [c]

[a] Department of Economics and Finance, Michael J. Coles College of Business, Kennesaw State University, 1000 Chastain Road, Kennesaw, GA 30144, Georgia
[b] 800 West Peachtree Street, Scheller College of Business, Georgia Tech, Atlanta, GA 30308-0520, Georgia
[c] Rotman School of Management, 105 St. George Street, University of Toronto, Toronto, ON M5S 3E6, Canada

ARTICLE INFO

*Article history:*
Received 20 January 2017
Received in revised form
18 December 2017
Accepted 10 April 2018
Available online xxx

*Keywords:*
Information acquisition
Informed trader
Experimental market

ABSTRACT

We report the results of 18 experimental markets designed to investigate the effect of the information environment on informed traders' performance. In our experiment, traders bid to acquire costly, imperfect information on asset value and then take part in a double-auction asset market. We posit that the nature of the information environment, distinguished by the cost of information, affects traders' ability to prosper. Using the inverse relationship between cost of information and number of informed traders, we study whether traders can properly determine the value of the information under enriched and impoverished environments. In our experiment, the enriched environment includes a significant number of informed traders, whereas the impoverished environment has few informed traders. We find that traders in an impoverished environment pay too much for information and, once informed, they do not transact enough to recover the cost of information acquisition. Traders who compete for information that confers a larger information advantage are worse off than those who compete in an environment in which information is more widely available.



## 1. Introduction

Traders devote considerable resources, including time and effort, to gather and evaluate information on asset value. The decision to engage in costly information acquisition is far from simple. Traders must discern the usefulness of private information, requiring them to anticipate the actions of others and assess the extent to which asset price is informative (e.g., Diamond, 1985; Grossman & Stiglitz, 1980; Hauser, Huber, & Kaempff, 2015; Verrecchia, 1982a). Because uncertainties abound, traders face substantial difficulty gauging the expected benefit of being informed.

Experimental findings are mixed as to whether informed traders are able to recover the cost of information acquisition (e.g., Ackert, Church, & Shehata, 1997; Copeland & Friedman, 1992; Huber, Angerer, & Kirchler, 2011; Huber, Kirchler, & Sutter, 2008; Sunder, 1992; Tucker, 1997). Comparisons between studies are complicated because features vary across experimental markets. An important and unexamined feature is the nature of the information environment, representing the cost of information acquisition. According to the theory developed in Grossman and Stiglitz (1980), the higher the cost of information, the smaller the equilibrium percentage of individuals who are informed. In an efficient market, the incremental value generated from using information equals the cost of the information, so that the value of information is a decreasing function of the number of traders informed in the market. We posit that the nature of the information environment, impoverished versus enriched, has a marked effect on traders' ability to properly assess the expected benefits of private information.

When the environment is impoverished, information is costly to come by. Information acquisition is effortful and challenging and, thus, occurs infrequently. Under such conditions, traders believe that purchasing information will allow them to make sizable profits because the high cost will discourage others from information acquisition. We argue that informed traders focus excessively on self, causing them to overestimate their ability to capitalize on an informational advantage while ignoring potential difficulties in executing beneficial trades (e.g., Hales, 2009; Langer, 1975; MacDonald & Ross, 1999; Otten & van der Pligt, 1996; Weinstein,

* Corresponding author.
*E-mail addresses:* lackert@kennesaw.edu (L.F. Ackert), pzhang@rotman.utoronto.ca (P. Zhang).

https://doi.org/10.1016/j.aos.2018.04.002
0361-3682/

1980). The heightened self-focus propels them to overspend on information acquisition and, further, to be preoccupied with protecting their advantage. As a result, informed traders constrain their activity to inhibit information revelation (Caskey, Hughes, & Liu, 2015; Kyle, 1984, 1985; Rustichini, Satterthwaite, & Williams, 1994; Wang, 1998), but so much so that it negatively affects their ability to recover the high cost of information acquisition and degrades their performance.

In contrast, when the environment is enriched, information is less costly, so that many traders become informed. With more widely available information, competitive pressures make it challenging to earn informational rents (e.g., Foster & Viswanathan, 1993; Holden & Subrahmanyam, 1992). Informed traders must transact aggressively to exploit their advantage (e.g., Bloomfield & O'Hara, 1999; Tucker, 1997). Such behavior, in turn, speeds information dissemination, undercutting their advantage (Foster & Viswanathan, 1996; Rustichini et al., 1994). Therefore, in an enriched environment, informed traders are more likely to focus on the market and other traders rather than on self, resulting in more accurate estimation of their ability to use information.

We conduct 18 experimental markets to investigate the effect of the information environment on informed traders' ability to properly assess the value of the information and, in turn, their performance. In our experimental sessions, traders vie to acquire costly, imperfect information on asset value and then take part in a double-auction asset market. We vary the number of informed traders across experimental markets, representing different information environments. We refer to the environment as impoverished when markets have few informed traders and as enriched when markets have many informed traders. In an impoverished environment few traders are informed, which reflects the higher value of information and captures the feature of this information environment in which information acquisition is more demanding and costly. By comparison, in an enriched environment, the opposite holds. The nature of the information environment is important because it impacts the potential benefit of information acquisition. That is, informed traders have more (less) to gain when the environment is impoverished (enriched) (e.g., Diamond, 1985; Maffett, 2012; Naranjo, 2013; Verrecchia, 1982a; Zhang, 2001). Other studies vary the number of informed traders and endow traders exogenously with costless, private information, and, thus, they ignore the cost of private information (e.g., Ackert & Church, 1998; Ackert, Church, & Zhang, 2002; Bossaerts, Frydman, & Ledyard, 2014; Schnitzlein, 2002). This line of research begs the question of whether traders can properly evaluate the benefit of information acquisition. The issue is important because it has significant implications for the production of private information as well as regulatory calls to promote transparent disclosures, particularly in impoverished environments.

The research issue naturally lends itself to a laboratory study. With an experimental economics approach, we are able to regulate the flow and content of private information, creating different information environments; to observe the cost of information acquisition as determined endogenously, reflecting traders' readiness to expend resources; and to identify informed and uninformed traders, tracking their market activity and performance. Archival researchers have used institutional ownership to proxy for the proportion of better-informed traders (e.g., Ali, Klasa, & Li, 2008; Utama & Cready, 1997), but this proxy is comingled with relative search costs and other features of firms' information environment (e.g., the availability of pre-disclosure information and returns expectations). An important and missing feature of prior work is allowing traders to determine *endogenously* who becomes informed and what amount to spend (e.g., Libby, Bloomfield, & Nelson, 2002, p. 791). Our experimental approach allows us to assess directly whether it pays to acquire information, isolating the underlying information environment.

Our results indicate that informed traders fare poorly when the information environment is impoverished, with their performance being inferior to that of uninformed traders. We offer evidence that when the environment is impoverished, informed traders misjudge their ability to exploit an informational advantage and overspend to acquire private information. Further, they do not transact enough to recoup the cost of information acquisition, even under the naïve assumption that information is *not* disseminated. Along these lines, a stream of theoretical research suggests that information acquisition per se creates a deadweight loss (e.g., Diamond, 1985; Hirshleifer, 1971; Verrecchia, 1982b). Consistent with this research, our experimental markets provide little evidence that investment in information is welfare-improving in our environment.

Our findings have implications for the disclosure of value-relevant information. Public disclosures (mandatory or voluntary) can be particularly beneficial when the information environment is impoverished, including policy directives that promote transparent disclosures. When the environment is impoverished, information is costly to obtain, and traders' behavior can negatively affect their economic well-being if traders overspend on information. Regulatory initiatives that encourage transparent disclosures increase the availability of useful information. Such initiatives restrain traders' tendency to overspend on information acquisition, enhance information flows, and facilitate pricing and allocative efficiencies. Therefore, traders are better able to allocate scarce resources in a manner that is welfare-improving.

Our findings also have implications for the extant literature on winner's curse, which documents overspending: auction winners frequently overpay to acquire an item (e.g., Kagel & Levin, 2011; Kagel, 1995; Thaler, 1988). Charness and Levin (2009) suggest that it is important to examine how winner's curse is affected by individuals' experience and institutional variations, including how individuals behave in market settings. Our finding that traders overpay to acquire private information is analogous to winner's curse. Our results indicate overspending when one *or* two participants acquire private information. Indeed, overspending is even more pronounced in markets with two informed traders. Importantly, overspending persists over time: that is, as traders accumulate experience with the institutional setting. Our market participants appear to have difficulty assessing future prospects – *how* they will use private information to earn informational rents. Relatedly, Charness and Levin (2009, 228) assert that winner's curse arises because individuals "fail to recognize that a future contingency is relevant to their current decisions." We surmise that individuals' cognitive frailties underlie difficulties incorporating future events in decision making, which hinder performance.

In addition to examining the impact of the information environment on performance, we examine whether traders are able to undo bias relating to asset value in the information they purchase. We include a bias manipulation in our design because much previous research documents that financial analysts' 6- to 12-month ahead earnings forecasts are overly optimistic, on average (e.g., Barefield & Comiskey, 1975; O'Brien, 1988; Richardson, Teoh, & Wysocki, 2004). In one-half of our markets, traders compete to acquire information that provides an unbiased estimate of asset value, and in the other half the information is systematically biased upward. Our findings indicate few differences between bias treatments, suggesting that informed traders are able to adjust for systematic bias.

The remainder of this paper is organized as follows. In section 2, we provide a framework to assess the performance of informed traders in light of the information environment. In section 3, we describe the experimental method. In section 4, we present the

Please cite this article in press as: Ackert, L. F., et al., Informed traders' performance and the information environment: Evidence from experimental asset markets, Accounting, Organizations and Society (2018), https://doi.org/10.1016/j.aos.2018.04.002