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Reputation distribution and consumer-to-consumer online auction market structure: an exploratory study

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Abstract

The rapid growth of the consumer-to-consumer online auction market demands research into its market structure and future trends. We propose that online reputation is becoming an important indicator of online traders' business capacity in the auction market. Based on the data sampled from eBay.com, we find that seller reputation, rather than buyer reputation, is lognormally distributed. Following Gibrat's law and the theory of firm's entry and exit, we further explore the reputation data to study the dynamics of the online market. Implications of the findings are discussed.

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1. Introduction

The consumer-to-consumer (C2C) online auction market has experienced phenomenal growth in recent years and has become the most active segment of e-markets today. eBay, the fastest-growing C2C online auction marketplace, is highlighted as one of the most profitable e-commerce companies because of its continuous innovation. In 2002, a total of US\$14.87

billion was transacted on eBay.com, with more than 12 million items listed across 18,000 categories on any given day [8]. Forrester [13] forecasts that online retail sales in the United States will reach nearly US\$230 billion by 2008. These figures appear to be remarkable, considering the fact that fraud has been plaguing the C2C online auction market since its emergence [2,23]. Studies show that online fraud incidents failed to undermine the fast growth of C2C online auction markets because of the increasing availability and effectiveness of online *reputation scoring systems* (in short, *reputation systems*) in electronic marketplaces [3,25]. Online reputation

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systems record and report an online trader's reputation according to other traders' feedback. The information available from a reputation system helps to improve prospective traders' trust and conviction in conducting online transactions. It also reduces the chances of fraud because, typically, traders are expected to maintain good reputation records in order to maximize their profits. In this way, a reputation system may not only serve as a guide to otherwise clueless entrants, but also help enhance the predictability of existing traders' behavior and honesty.

The online reputation system has attracted researchers from the behavioral sciences and economics to investigate the new issues of reputation in the e-market, such as the effects of online reputation on trader's trust (e.g., Ref. [3]) and auction price (e.g., Ref. [29]). The observability of the reputation-establishing process and the numerical availability of reputation data have contributed to the proliferation of these studies. In classical economics studies, reputation is recognized as an intangible asset that can indicate a firm's potential for doing business [31]. Yet, reputation becomes partially visible in the context of C2C online auction markets because summarized reputation scores are reported by reputation systems. This visibility is why the quantitative research of reputation for the electronic market becomes realistic and feasible. However, to our knowledge, these valuable data have not been used in examining the role of reputation in the electronic markets at the macrolevel.

Research into the structure and dynamics of electronic markets is definitely important. In the last decade, the world has witnessed the fast growth of a world economy empowered by electronic commerce [4]. Online businesses have been mushrooming in the electronic marketplace and leading the trend of the new economy. In particular, the C2C online auction market has attracted wide attention because it has made virtually every Internet user a potential firm in the sense of electronic commerce. The growth of the firm has been considered "central to any explanation of the growth of an economy" (Ref. [18], pp. 1244). Therefore, understanding the issues in e-market structure (including the capacity distribution of online traders, market evolution patterns, and the influence of reputation system mechanism on market dynamics) will help researchers, practitioners, and policy makers

identify the growth trend of the e-market, estimate the long-term impact of e-commerce on the economy, and implement effective strategies and policies in e-business operations.

Initiated by Gibrat [14] in 1931, market structure research investigates issues such as firm's growth pattern, firm's entry and exit, and market concentrations [30]. The research uses firm size, revenue, value added, payroll, and new capital expenditure to measure firm capacity and has reached consistent—although not identical—conclusions [32]. Different from previous studies, our method uses reputation as the measure of firm capacity to study electronic market structure. In the business context, there are many different economic and noneconomic signals about a conventional firm's capacity, such as marketing information, accounting reports, social responsibility, media visibility, and so on [12]. The rationale of our method is that reputation can be basically regarded as the impression and assessment of a social entity's esteem or desirability [12]. A social entity, either an individual or a firm, builds his or its reputation based on all past behaviors [5]. At the macrolevel, sociologists and business scholars have long recognized reputation as an indicator of social stratification [26] and industrial stratification [11], which helps to categorize a person or a firm into different strata. Similarly, online reputation also signals the firm's capacity in the online context.

Following the insights provided by market structure theories, this paper is intended to investigate how the distributions of online traders' reputation scores reflect the structure of the C2C online auction market and how the distribution changes reflect the transition of the market status. In general, our research findings will shed light on understanding how the traditionally intangible reputation becomes tangible in reputation systems and plays an important role in e-marketplaces.

So far, our research has produced exciting outcomes that validate our method. In particular, investigating the applicability of classical market structure theories to electronic markets opens the door for us to apply other theories from the industrial organization field to the e-market. The rest of this paper is organized as follows. First, we present a review of background literature about market structure. Second, we explain our main concepts, research methodology,

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