The liquidity advantage of the quote-driven market: Evidence from the betting industry

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A R T I C L E   I N F O

Article history:
Received 1 October 2015
Received in revised form 6 July 2016
Accepted 22 July 2016
Available online xxx

JEL classification:
D40
L10
L83

Keywords:
Market structure
Liquidity
Betting industry

A B S T R A C T

Even though betting exchanges are considered to be the superior business model in the betting industry due to less operational risk and lower information costs, bookmakers continue to be successful. We explain the puzzling coexistence of these two market structures with the advantage of guaranteed liquidity in the bookmaker market. Using matched panel data of over 1.8 million bookmaker and betting exchange odds for 17,410 soccer matches played worldwide, we find that the bookmaker offers higher odds and better returns than the betting exchange when liquidity at the betting exchange is low.

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1. Introduction

Since the beginning of the 2000s, the betting industry has been characterized by the coexistence of quote-driven and order-driven markets. Similar to intermediary market makers in quote-driven financial markets, bookmakers operate on their own account and quote betting odds at which bettors can place their bets (Croxson & Reade, 2011). In the order-driven market, betting exchanges serve as a marketplace in which buy and sell orders are directly matched between bettors in a continuous double auction without intermediaries (De Jong & Rindi, 2009).

This coexistence of market structures is puzzling. Betting exchanges face less operational risk (Koning & van Velzen, 2009), have lower information costs (Davies, Pitt, Shapiro, & Watson, 2005) and exhibit higher prediction accuracy in their odds (Franck, Verbeek, & Nüesch, 2010; Smith, Paton, & Vaughan Williams, 2006, 2009). Nevertheless, bookmakers continue to be successful. Bookmakers have not only managed to survive but have also generated considerable growth in net revenues. For example, William Hill and Ladbrokes, two major bookmakers in the United Kingdom, increased their net sportsbook revenues between 2008 and 2012 from £42 million to £166.7 million (+297%) and from £61.7 million to £77.8 million (+26%), respectively.

This paper explains the coexistence of both market structures with the liquidity advantage of the quote-driven bookmaker market. Liquidity provision is an important task of market makers in a quote-driven financial market (Demsetz, 1968). By guaranteeing market liquidity at the odds quoted, the market maker fills the gap that arises from the asynchronous order arrival of buyers and sellers. Hence, the market maker facilitates the rapidity of exchange by offering narrow bid-ask spreads. In order-driven markets, however, liquidity is provided by the flow of orders from market participants (De Jong & Rindi, 2009). An absence of a two-sided trading interest results in bid and ask prices that are far apart, which increases transaction costs. Therefore, order-driven markets are expected to perform poorly if liquidity is low (Demsetz, 1968).

markets are combined. They find that market makers can improve the terms of trade when the liquidity offered by public limit orders is low.

This paper uses the betting industry to compare the quote- and the order-driven market structures. The betting industry offers the unique setting that identical betting contracts are traded on both market structures simultaneously, i.e., besides the market structure, everything else is equal. In related financial studies, differences in market structures are often accompanied by differences in underlying assets and/or differences in macroeconomic conditions across pure market structures (e.g., De Jong et al., 1995; Huang & Stoll, 1996, 2001) or by complex interactions within hybrid market structures (e.g., Friederich & Payne, 2007; Madhavan & Sofianos, 1998; Venkataraman & Waisburd, 2007).

Using matched panel data of over 1.8 million bookmaker and betting exchange odds for 17,410 soccer matches played worldwide, we find that bookmaker odds are higher than betting exchange odds if market liquidity at the betting exchange is low and that bookmaker odds are lower than betting exchange odds if market liquidity at the betting exchange is high. Bettors obtain higher odds and returns when using the quote-driven bookmaker market if the cumulative trading volume at the betting exchange is less than £ 23,400 and/or if the quoted spread at the betting exchange is higher than 0.044 on average. However, as bettor returns are still negative on average, bookmakers are able to generate positive profits even when offering higher odds than the betting exchange.

The comparative advantage of the guaranteed liquidity in the quote-driven bookmaker market is found both in cross-sectional analyses that use across-match differences, in panel analyses that use within-match differences and in dynamic panel analyses that include a lagged dependent variable. Our results also hold in a subsample analysis in which odds from up to 42 different bookmakers are compared to the betting exchange odds.

While Croxson and Reade (2011) argue that betting exchanges generally offer higher odds and bettor returns than bookmakers, we show that the opposite is true in illiquid markets. The liquidity advantage of the quote-driven bookmaker market rationalizes the decision of Betfair to start offering quoted odds in addition to the exchange-based odds as of February 2013 (Betfair, 2013a). Our findings also help to explain the recent shift in financial market structures from pure quote-driven or pure order-driven structures to hybrid structures that combine the advantages of both markets.

The remainder of this paper is organized as follows. In Section 2, we discuss the two market structures in more detail and review the relevant theoretical and empirical literature. In Section 3, we describe our data sets, which consist of bookmaker and betting exchange odds from soccer matches. Section 4 presents the empirical analysis of the guaranteed liquidity supply as a competitive advantage of the quote-driven bookmaker market compared to the order-driven betting exchange market. Section 5 concludes.

2. Quote-driven and order-driven markets

The organizational structure of a market comprises the trading rules for instruments (De Jong & Rindi, 2009). In the betting market, the instruments traded are bets. Similar to conventional assets and derivatives in financial markets, a bet is a state-contingent contractual claim on a future cash flow. This cash flow is determined by two parameters: (i) the outcome of the underlying event, such as a horse race, a soccer match or a political election, and (ii) the price of the contract, i.e., the posted odds (Sauer, 1998). A common betting type is fixed-odds betting, where the cash flow of a successful bet is determined ex-ante. For example, if the decimal odds on the home team of a soccer match are 1.40, a one-dollar wager pays $1.40 and yields a return of 40% if the home team wins. Therefore, higher odds imply a higher bettor return in the case of success but an accordingly lower winning probability.

Financial markets are classified as either quote-driven, where trades must be fulfilled through intermediaries, or order-driven, where trading is based on the direct interaction of market participants (De Jong & Rindi, 2005). Similar to market makers in quote-driven financial markets, bookmakers in the betting industry serve as intermediaries between buyers (bettors willing to place a bet on a particular outcome) and sellers (bettors willing to place a bet on the opposite outcome). The bookmakers unilaterally determine the odds for a given betting contract at which they are willing to accept bets (Harris, 2003). In this market, the bookmakers guarantee sufficient liquidity. The odds quoted by the bookmakers already contain a commission (i.e., the ‘overround’) that compensates them for providing liquidity and bearing the risk of unfavourable outcomes. Examples of well-established bookmakers are Betwin, Ladbrokes, Tipico and William Hill.

Since 2000, betting exchanges have evolved in the betting industry. They operate as order-driven markets in which buyers and sellers trade directly with each other in a continuous double auction without the intermediation of market makers. In this market structure, bettors can provide or take liquidity. Bettors who provide liquidity post a limit order that indicates the terms at which they will trade. A transaction only takes place if there is a corresponding order on the opposite side of the market. Otherwise, the order is placed in the limit order book until it is either executed or cancelled. Bettors who take liquidity submit a market order that is immediately executed at the best odds available (De Jong & Rindi, 2005; Harris, 2003). Betting exchanges facilitate trading activity by providing an electronic platform on which supply and demand are matched and collect a commission on the net winnings of successful bets (Franck, Verbeek, & Nüesch, 2013). Examples of larger betting exchanges are Betfair, BETDAQ and Matchbook.

Previous studies that compare the two market structures within the betting industry suggest that the betting exchange market is superior to the traditional bookmaking market in several ways. Koning and van Velzen (2009) argue that a fundamental advantage of betting exchanges is that they do not take any trading position. Because betting exchanges simply charge the winners a certain commission, a steady flow of income independent from the match outcomes is guaranteed. This exposes betting exchanges to minimal risk. In contrast, traditional bookmakers are continuously exposed to risk, as they can lose substantial amounts of money when they misjudge the probabilities or when they are over-exposed to an event that occurs (Davies et al., 2005). Furthermore, bookmakers need informed specialists who monitor the market and actively manage the odds. The information costs of bookmakers are therefore considerably higher than those of betting exchanges that simply provide a trading platform (Davies et al., 2005).

Empirical studies have found that prediction accuracy is higher in the order-driven betting exchange market than in the quote-driven bookmaker market (Franck et al., 2010; Smith et al., 2006, 2009). Moreover, Croxson and Reade (2011) and Ozgit (2005) show that bettors obtain higher net returns in the betting exchange market than in the bookmaker market. Given these advantages of the order-driven market, the ongoing success of the quote-driven bookmaker market is surprising.

In this paper, we investigate a distinct source of competitive advantage of the quote-driven market: the benefit that arises from the continuous provision of liquidity by the bookmaker. According to the theoretical work of Demsetz (1968), a key function of market makers in financial markets is the supply of immediacy by continuously quoting prices and by providing liquidity to the asynchronous arrival of orders from investors. The models of Garbade and Silber (1979) and Grossman and Miller (1988) show that the liquidity supply of market makers reduces temporal imbalances in
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