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Does IPO subscription demand affect investor herd behavior in Taiwan?☆

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ABSTRACT

Taiwan's initial public offerings (IPOs) are primarily fixed-price methods, public subscription issues that only allow individual investors to participate. The Taiwan Stock Exchange discloses subscription demand information, after which individual investors request the highest subscription rate shares; this can lead to herding. The empirical results of this study showed that investors exhibit increased attraction toward IPOs with extremely high subscription demand. After identifying sample issues with herd features, herd behavior in Taiwan's IPO market was found to be consistent with the "winner's curse" theory. Additionally, investors overreacted to subscription demand in the short run, which leads to negative long-term returns.

1. Introduction

Herd behavior refers to investors mimicking or following others' trading decisions (Banerjee, 1992; Chang, Cheng, & Khorana, 2000; Christie & Huang, 1995; Scharfstein & Stein, 1990). An uncertain environment, in which investors follow the decisions of others to avoid potential loss because of an information disadvantage or to reduce information-acquisition costs, may induce herd behavior. Kumar and Lee (2006) suggested that individual investors typically possess inferior information and have higher herd motives than do institutional investors.¹ Therefore, a qualified sample market should comprise of individual investors with a high degree of information asymmetry, and can deliver information that induces individual investors to follow a herding strategy.

Taiwan initial public offering (IPO) issuers often use a public subscription process (i.e., fixed-price IPOs). Only individual investors are allowed to subscribe to IPO stocks² and in the case of oversubscription, a lottery is used to determine the purchasers. In Taiwan, the issuers typically announce underwriting information, and investors subsequently make decisions about subscribing according to this information. Following the public subscription, the Taiwan Stock Exchange (TSE) discloses subscription demand information, such as

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¹ In addition to individual investors, fund managers also present herd behavior by following other senior managers' trading directions to maintain their own reputation and value in the labor market (Scharfstein & Stein, 1990; Wermers, 1999).

² According to Article 54 of "Taiwan Securities Association Rules Governing Underwriting and Resale of Securities by Securities Firms," the subscribers in a public subscription shall be restricted to R.O.C. nationals.

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the allocation ratio. Because Taiwan IPO subscriptions only allow individual investors to participate in the purchase, subscription thresholds are low (i.e., usually limited to 1000 shares per person) and individual investors are the major participants in the Taiwan stock market.³ Thus, individual investors' preferences can be revealed by subscription demand.⁴ Specifically, investors in Taiwan can estimate the market demand through the subscription demand revealed before the listing date. This unique feature of Taiwan's IPO market makes it ideal for observing herd behavior.

Taiwan IPO investors refer to subscription demand information to establish their trading strategies during the initial listing period for two reasons. First, the rules of subscription create a “winner's curse” risk (Chowdhry & Sherman, 1996; Keloharju, 1993; Koh & Walter, 1989; Levis, 1993; Lin, Kao, & Chen, 2010; Rock, 1986), which refers to the phenomenon in which IPO bidders with inferior information successfully subscribe to shares issued at a premium. Because overvalued stocks usually fall after the listing period, the winners incur losses; in other words, the winner tends to overpay in this type of bid. IPO subscription activities are similar to a black box, because investors cannot identify the demands of other participants. Following the ballot, the winners are required to pay the offer price plus service charges, and they cannot opt out or request a subscription price refund.⁵ Therefore, investors who participate in subscription activities are exposed to the winner's curse risk and tend to successfully subscribe to IPOs unfavored by informed traders. Chen and Kao (2006) found that in Taiwan the winner's curse risk exists even if institutional investors, who generally possess superior information, are excluded from IPOs. To avoid this risk, investors can choose to not participate in the subscription until the IPO demand information is released.

Second, information about the demand is also valuable for IPO subscription participants. After being informed of a high demand, the winners of high-demand IPOs can hold their IPO stocks or increase their shareholdings; by contrast, the winners of low-demand IPOs sell their stocks after the IPO to avoid losses caused by the winner's curse. Therefore, subscription demand information provides investors with a reference for investment decision-making, regardless of whether they participate in the subscription. These are herd behavior practices, and can be easily observed in the market. By contrast, most IPOs in the United States (and numerous other countries) usually adopt a book-building (i.e., non-fixed-price) method, in which the subscription demands are confidential and allocation details are typically unavailable, which renders testing for herd behavior infeasible. Thus, whereas Cornelli and Goldreich (2003) used a formal book-building procedure to examine the details of institutional bids for shares,⁶ this study used public subscription information. The market structure of China's IPOs is quite similar to that of Taiwan's, and both Jiang and Leger (2010) and Shen, Coakely, and Instejord (2013) have discussed topics similar to those of this study. The results of this study using Taiwanese IPO data can therefore be compared with those revealed through research into China IPOs.

Prior studies that have investigated IPO herd behavior have mainly focused on the distribution of subscription demand. Welch (1992) and Amihud, Hauser, and Kirsh (2003) have found that subscription demand is either extremely high or low, with very few cases in between. The extreme trading phenomena caused by the herding transactions of most IPO investors are called “information cascades”. Information cascades are caused by investors adopting a herd strategy, resulting in an extremely high or low demand (Hirshleifer & Teoh, 2003; Nelson, 2002). However, an IPO is a black box during the public subscription period; thus, the process of forming a herd strategy and information cascades among investors is unclear. Perhaps a “great minds think alike” effect causes most investors to participate in (or out of) the subscription activities.

Although the herd behavior of IPO markets is unlikely to be captured on the basis of the distribution of subscription demand, the idea of information cascades is helpful. An extreme subscription demand conveys a more reliable trading direction than does subscription demand alone. Therefore, if IPO investors engage in herd behavior, they should be more sensitive to extreme subscription demand that lead to a nonlinear relationship between subscription demand and initial returns. Jiang and Leger (2010) and Shen et al. (2013) have presented similar views on this subject. Jiang and Leger (2010) also supported information cascades, demonstrating that the initial returns are positive in China's IPO market but negative over the long term. Meanwhile, Shen et al. (2013) suggested that China's IPO subscription demand helps to predict initial returns, and that their IPO initial returns are negatively correlated with long-term returns. Unlike previous research, this study emphasized the response of IPO investors to extreme demand. We anticipated that the level of subscription demand might affect the herd behavior of IPO investors, who exhibit higher sensitivity to subscription information for IPOs with high demand than for those with low demand.

To capture the herd behavior of IPO investors, this study investigated the initial returns under various subscription demand intervals, a phenomenon that has not been addressed in previous studies. Specifically, we employed both piecewise regression and quantile regression to observe the nonlinear relationship between subscription demand and initial returns. On the basis of the information cascades perspective proposed by Welch (1992), later potential investors can imitate earlier investors when IPO shares are sold sequentially. Accordingly, information cascades may cause extreme demand and encourage overreaction (Aggarwal & Rivoli, 1990; De Bondt & Thaler, 1985; Hirshleifer & Teoh, 2003; Nelson, 2002; Ross, Westerfield, Jaffe, & Jordan, 2009). Thus, this study also investigated IPO long-term returns to reveal whether the herd behavior of IPO investors involves overreaction. If the adjustment of long-term returns is most apparent for the herding group, then IPO herd behavior leads to extreme demand and triggers overreaction.

The empirical results of this study indicated several crucial findings. First, the results of both the piecewise and quantile regressions

³ In the Taiwan stock market, individual investors, who accounted for 75% of the trading volume from 1997 to 2013, are primary participants, whereas institutional investors are the main participants in the U.S. market. (Annual Statistical Report of the Taiwan Stock Exchange, 2014). Individual investors are typically at an information disadvantage, and are therefore inclined to adopt a herding strategy.

⁴ In addition to public subscription activities, Taiwanese IPOs also adopt book building (non-fixed-price). Because most of the participants in book building are institutions or investors with special relations, the market demand is difficult to reveal.

⁵ Please refer to Article 52-1 of “Taiwan Securities Association Rules Governing Underwriting and Resale of Securities by Securities Firms.”

⁶ Chang, Chen, Kuo, and Wu (2014) showed that the price discovery of book building is inefficient in Taiwan's IPO market.

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