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Herd mentality in the stock market: On the role of idiosyncratic participants with heterogeneous information

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ABSTRACT

This paper examines herd behaviour using aggregate market data for stocks, with a focus on the role of idiosyncratic participants with heterogeneous information. We look at herding asymmetry between up and down markets, taking into consideration the daily price limits and the impact of the recent financial crisis. We also improve upon existing tests for fundamental and non-fundamental herding, as well as proposing a method for investigating herd behaviour of different groups of investors. Empirical evidence based on the Ho Chi Minh Stock Exchange in Vietnam reveals a greater level of herding on up compared to down market days, and a significant reduction in the magnitude of herding following the crisis. We document robust intentional herding even when unintentional (fundamental) herding is factored out. Our empirical results also uncover potential within-group herding and between-group interactions among arbitrageurs and noise traders in the market.

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1. Introduction

Herding towards the stock market consensus has been receiving great attention from both academics and policy makers. In the existence of herding, a group of investors tend to trade in the same direction over a period of time, leading to observed behaviour patterns that are correlated across individuals (Bikhchandani, Hirshleifer, & Welch, 1992), which is an undesirable consequence for risk diversification. As another major consequence of herding, if market participants tend to herd around the market consensus, investors' trading behaviour can cause asset prices to deviate from their fundamentals, resulting in assets being inappropriately priced. Herding thus is of considerable concern to market participants, as it could cause investors to transact at inefficient prices (Christie & Huang, 1995; Fama, 1970), increase difficulty for investors in performing diversification (Chang, Cheng, & Khorana, 2000; Venezia, Nashikkar, & Shapira, 2011), and accelerate financial market volatility and instability (Bikhchandani & Sharma, 2001).

Empirical literature on herd behaviour is generally categorised into two main strands. The first strand relies on detailed investor-specific data to detect herding by institutional investors in the form of correlation in trading patterns among a particular group of investors, usually fund managers (see, among others, Lakonishok, Shleifer, & Vishny, 1992; Grinblatt, Titman, & Wermers, 1995; Wermers, 1999; Frey,

Herbst, & Walter, 2014). The second strand makes use of aggregate market data and aims at uncovering co-movements towards the market consensus due to individual investors' behaviour (see, among others, Christie & Huang, 1995; Chang et al., 2000; Galariotis, Rong, & Spyrou, 2015). This paper falls within the second strand, testing for herding towards the market consensus with a focus of further exploring the role of idiosyncratic investors with heterogeneous information.

Evidence documented in the literature indicates that herd behaviour is more likely to occur in emerging markets, where there might not be many experienced market participants and the governing rules regarding the release and the flow of information are limited, leading to diverse responses and interactions among idiosyncratic investors when they are exposed to heterogeneous information. For instance, investors might act differently in the process of collecting and analysing information. Less sophisticated investors may find it costly to collect and analyse information on their own, and therefore tend to mimic what more successful investors do (Chiang & Zheng, 2010; Villatoro, 2009). Trading with heterogeneous information due to information asymmetry also plays a major role in creating herds. Bikhchandani and Sharma (2001) argue that, under the situation of information asymmetry, some investors might suppress their own sets of private information and turn to follow others' behaviour due to intrinsic preference for conformity. When investors do not make their investment decisions simultaneously, such information cascades could easily turn into so-called intentional herding. Moreover, when investors are faced with inadequate supply of firm-specific information, which is likely to happen in emerging

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markets, they might resort to using solely macroeconomic information, resulting in similar investment decisions when facing similar decision problems with similar information sets (such as fundamental information regarding the macro economy and aggregate financial market). Such phenomenon, discussed in [Bikhchandani and Sharma \(2001\)](#), is referred to as spurious herding and has subsequently been investigated in [Klein \(2013\)](#), [Bohl, Klein, and Siklos \(2014\)](#), and [Galariotis et al. \(2015\)](#). Consequently, heterogeneity among market participants and information could be a key factor in determining and hence to understand herd behaviour in emerging markets. Empirical research on herding behaviour in emerging markets with a focus on the role of idiosyncratic participants with heterogeneous information, however, is still scarce.

Though the literature on herd mentality in the stock market is vast, challenges remain when it comes to revealing the existence and the causing mechanism of herding empirically. One of the challenges is to purge out the impact of spurious herding so as to isolate and identify true (intentional) herding. Since information on the macro economy and the aggregate market is commonly known to the public, convergence in investors' behaviour based on such information most likely does not necessarily involve investors reversing their decisions, and thus strictly speaking, is not herding ([Bikhchandani & Sharma, 2001](#)). It is therefore important to factor out such fundamental-driven (spurious) herding before further exploring the possibility of intentional herding. Studies that do not make such a distinction might overestimate the existence and the intensity of herding. To address this issue, we follow the approach adopted in [Galariotis et al. \(2015\)](#) to separate and quantify spurious and intentional herding. More specifically, we decompose return dispersion (Cross Sectional Absolute Deviation, CSAD) into two parts by regressing it on conventional return factors (i.e., size, book-to-market, and momentum) proposed in [Fama and French \(1995, 1996\)](#) and [Carhart \(1997\)](#).¹ Given that these return factors capture significant information on the dynamics of macro economy and aggregate financial market, the fitted value of this regression captures dispersions due to investors' reaction to changes in fundamental information which can be used to investigate fundamental-driven herding, while the residuals from this regression captures dispersions due to investors responding to non-fundamental information.² Using this approach, [Galariotis et al. \(2015\)](#) document non-fundamental herding in UK and US and intentional herding in US. In this paper, we explore the possibility of implementing this method using data from an emerging country. Further discussions on this approach are presented in [Section 2](#).

Another challenge is to build a closer link between theoretical arguments and empirical studies in order to identify the cause of herd mentality. Theoretical wisdom regarding causes of herding in the literature includes herding due to informational externalities and cascades ([Banerjee, 1992](#); [Bikhchandani, Hirshleifer, & Welch, 1998](#); [Bikhchandani et al., 1992](#); [Welch, 1992](#)), reputation-based herding ([Graham, 1999](#); [Prendergast & Stole, 1996](#); [Rajan, 2006](#); [Scharfstein & Stein, 1990](#); [Zwiebel, 1995](#)), and herding due to compensation structures ([Trueman, 1994](#); [Maug & Naik, 1996](#); and [Admati & Pfleiderer, 1997](#)).³ While theoretical models on this topic are well developed, most empirical studies in the current literature nevertheless are based on purely statistical approaches usually not derived from theoretical models. This is due to the fact that detailed and reliable data that could be used to directly test these theories are scarce. Though we too

¹ This is in line with approaches proposed by [Klein \(2013\)](#) and [Bohl et al. \(2014\)](#), who also utilised Fama-French and macroeconomics factors in their regressions to control for fundamental (spurious) herding. In our paper, we attempt to separate and quantify these two types of herding.

² [Liew and Vassalou \(2000\)](#) find that the two factors HML and SMB embody significant information regarding the growth of Gross Domestic Product (GDP) in ten international markets, and that they can be used to predict future economic growth in some countries.

³ See [Devenow and Welch \(1996\)](#) and more recently [Bikhchandani and Sharma \(2001\)](#) and [Spyrou \(2013\)](#) for literature review of theoretical models.

do not have such rich information to isolate and test the existence of various theories directly in this paper, we make an effort to search for potential dominant causes of herding by incorporating idiosyncrasy among stock market participants in the analysis to further explore herds due to responses and interactions among idiosyncratic investors when they are exposed to informational externalities and cascades ([Bikhchandani et al., 1992](#); [Bikhchandani et al., 1998](#); [De Long, Shleifer, Summers, & Waldmann, 1990a](#); [Shleifer & Summers, 1990](#)).

More specifically, instead of assuming investors are homogeneous like most of the studies in the herds towards market consensus literature, following [Shleifer and Summers \(1990\)](#), we assume that both arbitrageurs and noise traders exist in the stock market. Arbitrageurs are sophisticated and fully rational investors, who are more capable of identifying stocks that on average outperform the market (positive alpha) and constructing trading strategies centring on these stocks.⁴ They attempt to conduct arbitrage, but such action is limited as it could be risky.⁵ With a finite number of arbitrageurs in the market, under these assumptions, arbitrage alone is not powerful enough to direct stock prices towards their equilibrium levels. Noise traders, on the other hand, are less sophisticated investors who are not fully rational and tend to pick and trade stocks based on sentiments, and thus their trading patterns could be subject to systematic biases.⁶ Many trading strategies conducted by noise traders are based on pseudo-signals and are correlated to each other, leading to the same judgement biases and persistent mistakes ([Shleifer & Summers, 1990](#)). Consequently, they are more likely to hold and trade stocks that on average underperform the market (negative alpha).

Under these assumptions, in the presence of informational externalities and cascades, herds not only could happen among investors within each of these two groups (within-group herding) but also could happen due to interactions of investors between two groups (between-group herding). Within-group herding for arbitrageurs, captured by decreases in the dispersion of returns among stocks that on average outperform the market, is likely due to fund managers trading portfolios centring positive alpha stocks so as to herd to preserve reputation and/or compensation ([Admati & Pfleiderer, 1997](#); [Scharfstein & Stein, 1990](#)) or due to arbitrageurs herd when they are exposed to information-based cascades.⁷ [Bikhchandani et al. \(1992\)](#) and [Bikhchandani et al. \(1998\)](#) show that, when the accuracy of the information with market participants is not a common knowledge, investors in the stock market, even when they are rational, may mimic the behaviour of an initial group of investors in the erroneous belief that this group knows something,

⁴ In this paper, for each stock, we assume that the estimated Jensen's alpha ([Jensen, 1968](#)), i.e., the estimated constant obtained from an equilibrium four-factor asset pricing model based on [Carhart \(1997\)](#), is a sufficient indicator of expected average return over the one predicted for the underlying stock. Note that we do not assume that arbitrageurs only trade stocks with positive alphas or noise traders only trade negative alpha stocks (which is unlikely the situation in the practice), only that they are more likely to trade corresponding positive/negative alpha stocks. Due to data constraints, we are unable to further identify whether a stock is held by arbitrageurs or noise trader. However, we believe this is not an unreasonable assumption to make, and can help shed lights on the behaviour of different groups of investors in the markets.

⁵ [Shleifer and Summers \(1990\)](#) identify two sources of risks that limit arbitrage, namely fundamental risk and risk due to unpredictability of the future resale price as suggested in ([De Long et al., 1990a](#)).

⁶ We thank an anonymous referee for pointing out that some noise traders could also be 'liquidity traders' as claimed in the literature. In this paper, we follow the definition of noise traders in [Black \(1986\)](#), seeing them as those "trading on noise as if it were information". This view is also adopted by [De Long, Shleifer, Summers, and Waldmann \(1990b\)](#), who note that noise traders "may get their pseudo-signals from technical analysts, stockbrokers, or economic consultants and irrationally believe that these signals carry information".

⁷ [Scharfstein and Stein \(1990\)](#) illustrate that, if the market does not have perfect information about fund managers' ability and there is a need to share the blame when things go bad, reputation concerns could lead managers to follow each other's actions. [Maug and Naik \(1996\)](#) and [Admati and Pfleiderer \(1997\)](#) both show that, in a principal-agent setup and when managers' compensation depends on how their performance compares with a benchmark in the market, managers' action could be distorted and they turn to mimic each other. This usually ends up with an inefficient portfolio.

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