Institutional Herding in a Transition Economy: Evidence from Bulgaria

Author: Nikolay Yordanov

Abstract: The present paper examines whether Bulgarian institutional investors engage in herd behaviour. For this purpose, we use quarterly data for funds' holdings. The results reveal that the trades of institutional investors are intertemporally dependent, and that herd behaviour is present. Further, we test whether herding is due to intent or not. Our results reveal that herding is conditional upon the market direction, market-wide volatility, investors' economic sentiment, and market volume. Thus, we draw the conclusion that herding is intentional.

Keywords: institutional trading, institutional herd behaviour, Bulgarian stock exchange

JEL: G02; G10; G15; G23

1. INTRODUCTION

As to the Efficient Market Hypothesis (EMH), investors are rational and at any given time, the prices of securities accurately incorporate all the information that is currently accessible (Fama, 1970). Nevertheless, there are instances where a portion of the pricing cannot be justified by the Efficient Market Hypothesis (EMH). The portion of the phenomenon that cannot be elucidated by rational models is ascribed to the conduct of investors and scrutinized within the realm of Behavioural Finance (Do et al., 2008). An integral aspect of the field of Behavioural Finance is the analysis of investors' herding behaviour.

Herd behaviour, as defined by Banerjee (1992), refers to the act of following others without considering the knowledge we have. It is crucial for us to investigate the presence of herd behaviour and its impact on stock prices and investors' trading techniques.

Our study extensively analyses the scholarly literature on herd behaviour and compares the many definitions of herding proposed by scholars in the area. In addition, based on the research conducted by Holmes et al. (2011), we categorize herding behaviour as rational and irrational, and present additional evidence and reasons for this phenomenon. However, we will outline the diverse impacts that herd behaviour has on various markets.

We conduct empirical research to examine if Bulgarian institutional investors exhibit herd behaviour. In accordance with the arguments presented by Holmes et al. (2011), we employ the methodology proposed by Sias (2004). The data we have consists of the quarterly portfolio statements from 20 Bulgarian funds, spanning from the start of 2006 to the last quarter of 2010. Additionally, for the aim of our experiment, we utilize the daily prices and market volume of the weighted-average price index BG40 for the identical time frame. To ascertain the intentionality of herding, we establish a correlation between herding and

factors such as market direction, market-wide volatility, economic sentiment, and market volume. Unless intentional, we anticipate no disparities in the herding levels during testing, regardless of whether it is contingent on the four specified variables.

Our findings indicate that the trading activities of institutional investors are influenced by previous quarters, as seen by consistently positive and statistically significant average correlation coefficients in all our tests at a 5% significance level. Additionally, our subsequent examinations indicate that the degree of herding is contingent upon the market's trajectory, overall market volatility, economic sentiment, and market volume. In other words, the purposeful nature of the Bulgarian funds' herd behaviour is being emphasized. Moreover, the phenomenon known as the 'crowd effect' occurs during a bearish market, resulting in less volatility and a decline in economic sentiment. However, when the market volume rises, we observe indications of herding behaviour in cases when there is only a single active fund involved in a particular stock. Conversely, when multiple active funds are involved in trading a stock, the phenomenon known as the 'crowd effect' occurs during periods of declining trading activity. We contend that this phenomenon can be attributed to reputational motivations, issues connected to agency, and the propagation of informational cascades.

The paper is structured as follows: Section 2 provides a definition of the herding phenomenon and differentiates between rational and irrational herding. Section 3 presents evidence of herding and its impact on various markets. Section 4 explains the methodology employed in our research. Section 5 discusses the data utilized for the analysis. Section 6 presents the discoveries and discusses the empirical outcomes. Finally, Section 7 provides a summary of the paper.

2. HERDING BEHAVIOUR

Daily, we encounter various social and economic circumstances in which our decision-making is influenced by the actions of those around us, whether we realize it or not (Banerjee, 1992). We may be swayed in our choices of which book to read, which cafe to visit, or which play to see. Psychological study suggests that herding behaviour may be a function of individuals' need to conform and avoid distress caused by differences of opinion (Caparrelli et al., 2004). Another instance is the occurrence in which individuals are 'voting with their legs', meaning they are being swayed by the opinions of others regarding which municipality is more favorable to reside in based on the level of taxes paid and the quality of living received. Consequently, they choose to establish themselves in that location (Brussarski, 2007).

According to Banerjee (1992), herd behaviour is the act of imitating others without considering the information we have. By disregarding our details and imitating others, we come into a circumstance where there is a decrease in the amount of useful information available. In addition, as stated by Hirshleifer and Teoh (2003), the illogical phenomenon of herding results in individuals adopting similar actions. Herding is the phenomenon where individuals adopt the same course of action as a group, albeit without understanding the factors that have impacted the group's decision.

To enhance comprehension of the herding phenomenon, Banerjee (1992) provides an illustration involving a group of individuals faced with a decision between two alternatives, such as A and B. The herd externality implies that even if B is the favored choice, the subsequent person's decision will be the same as the first person's choice, regardless of their private information. Even without adhering to the specific order of choices, as long as individuals are cognizant of the distribution of alternatives, they can participate in herd behaviour. However, the mere act of allowing individuals to observe the actions of others does not inevitably lead to herding behaviour.

Regardless of the size of the population, the correct option is always chosen, even if it is not socially accepted (Banerjee, 1992).

Keynes (1936) posits that this is the typical behaviour shown by participants in the capital markets. Herding behaviour might arise from the inclination of investors to conform to the market rather than making independent decisions (Devenow and Welch, 1996). Caparrelli et al. (2004) state that this type of behaviour is frequently observed in finance due to several reasons. Firstly, not all investors exhibit full rationality. Secondly, the efficient portfolio differs from the market portfolio. Lastly, the values of securities are influenced by psychological factors rather than being solely based on rational considerations.

Herding behaviour suggests that investors would achieve the market return since they are acting collectively as a financial flock and are influenced by the market consensus (Christie and Huang, 1995). Moreover, the authors contend that the phenomena are exhibited at periods of market extremes.

While Gryphon et al. (2003) propose that herd behaviour varies among markets and countries, the motivations behind institutional herding can be classified into two categories: deliberate and inadvertent (spurious) herding. The first factor involves the occurrence of informational cascades, which are like a domino effect, and reputation-based herding. The second factor is attributed to the similarity among investment professionals and their tendency to engage in herding behaviour, as described by Holmes et al. (2011).

2.1. Rational herd behaviour

According to Bikhchandani and Sharma (2000), rational herding occurs when investors behave similarly due to the presence of identical "information sets" available to them. This could be due to their shared social class or their shared alma mater (Wermers, 1999). The occurrence of herding can still arise even in cases where the offered sets of information differ. Caparrelli et al. (2004) provide a comparable explanation and additionally assert that the phenomenon of 'fake' herding does not contradict the Efficient Market Hypothesis (EMH), but rather results in efficient outcomes.

Conversely, herding behaviour occurs when investors are inclined to invest in equities that possess specific characteristics (Falkenstein, 1996).

Holmes et al. (2011) contend that in the presence of unintended herding, the extent of herding should remain unaffected by market returns, volatility, and the regulatory environment. In contrast, if herding is deliberate, there will exist a correlation between these three variables and the degree of herding. Under such circumstances, the occurrence of

'informationally inefficient herd behaviour' might happen, which can result in scenarios where rational asset pricing models are not applicable and prices deviate from the underlying fundamentals (Bikhchandani and Sharma, 2000).

2.2. Irrational herd behaviour

According to Choi and Sias (2009), herding institutions are frequently accused of "driving prices away from fundamental values" and increasing market volatility. Based on the principles of irrational herding, investors tend to engage in herding behaviour to preserve their social standing or to imitate the trading decisions made by other funds.

2.2.1. INFORMATION CASCADES

When there are informational cascades, individuals tend to emulate the activities of others, even if they have their own private information (Banerjee, 1992). Informational cascades occur when the collective decision of a group is not influenced by individual private information, as stated by Graham (1999). However, it is not possible to have cascades without any action if the signals from people are not of a sufficient quality (Hirshleifer and Teoh, 2003). Bikhchandani and Sharma (2000) contend that in the absence of reliable information and a careful assessment of the potential gains and losses, investors tend to exhibit herd behaviour. Put simply, it arises because of a lack of equal access to information. The informational cascade phenomenon is characterized by two key aspects: • Previous decisions made by investors can heavily influence the overall consensus. • In the event of an incorrect trading strategy, investors may reconsider and initiate a collective shift in the opposite direction.

Hirshleifer and Teoh (2003) contend that cascades are often linked to information bottlenecks due to the acts of the aforementioned investor. They argue that a minor disturbance can serve as the catalyst for a well-established and widely accepted change. Gervais (1996) suggests that bid-ask spreads may generate information blockages. However, Hirshleifer and Teoh (2003) argue that these blockages are not permanent, as a shock might occur that disrupts the cascade. However, if future investors differ from the current ones and a new investor with distinct information emerges, this might potentially disrupt the cascade or even enhance the decision-making process.

While unselfish investors yield efficient results, information cascades involving self-centered individuals result in the exclusion of their knowledge from the public pool, leading to a negative externality (Bikhchandani and Sharma, 2000). Instances in which investors exhibit irrational behaviour can result in deviations from the fundamentals, causing rational asset pricing models to become invalid and prices to diverge from their true value.

2.2.2. REPUTATION-BASED HERDING

According to the research conducted by Scharfstein and Stein (1990), Trueman (1994), and Graham (1999), herd behaviour can be attributed to managers' concerns about preserving their reputation. Scharfstein and Stein (1990) argue that the manager's lack of conviction in selecting the correct stocks results in the occurrence of herd behaviour. It could still occur due to issues related to agency. In this scenario, the rewards obtained by the agents are contingent upon their performance relative to a benchmark, as outlined by Roll

(1992). In addition, Maug and Naik (1996) argue that when the benchmark's actions are identified, the portfolio manager being evaluated will engage in information herding to avoid underperforming the benchmark. Therefore, herding behaviour provides the manager with the necessary assurance to avoid performing worse than their colleagues (Holmes et al., 2011).

According to Admati and Pfleiderer (1997) (cited in Bikhchandani and Sharma, 2000), in a scenario involving multiple risky assets, connecting the rewards of managers to their performance in relation to benchmarks is inefficient, inconsistent with optimal risk sharing, and ineffective in addressing moral hazard and adverse selection issues.

Hirshleifer and Teoh (2003) argue that the extent to which herd behaviour is influenced by "agency considerations" directly correlates with the presence of institutional herding evidence. Nevertheless, the data varies considerably among different marketplaces.

3. HERD BEHAVIOUR IN THE FINANCIAL MARKETS - EVIDENCE

To gain a comprehensive understanding of herd behaviour, we explore its impact on the financial markets, investors, and analysts.

3.1. Does herd behaviour destabilize stock prices?

The herd behaviour of institutional investors does not fundamentally deviate stock prices from the values anticipated by rational pricing models (Lakonishok et al., 1992). This occurs when institutions engage in timely trading based on basic analysis. Analogous outcomes are noticed when 'identical illogical actions in the sentiment of individual investors' are encountered.

Foreign investors frequently face accusations of exerting a detrimental impact on emerging financial markets and are generally seen to be a contributing factor to the crises experienced by East Asian countries. According to Radelet and Sachs (1998), the primary cause of the East Asian economic decline is attributed to the financial panic. The data regarding whether investors' herd behaviour has a destabilizing effect on stock prices is inconsistent and varies between different markets.

According to Stulz (1999) as reported in Choe et al. (1999), the act of allowing foreign investors to participate in a stock market does not result in an increase in its volatility. In addition, Choe et al. (1999) refute the concept that foreign investors are linked to causing a destabilizing effect on the market. They assert that both positive feedback trading and herding do not inevitably lead to destabilization.

In contrast, Choi and Sias (2009) discover only limited evidence of a future return reversal. In other words, the phenomenon of institutional industry herding can occasionally cause the price to deviate from its underlying values. Dorn et al. (2008) discovered comparable evidence of pricing destabilization in the German market between February 1998 and May 2000. In addition, Hung et al. (2010) contend that the return to the average value following the collective selling of undervalued stocks by a group of investors suggests that this occurrence disrupts the stability of stock prices.

In contrast, Lakonishok et al. (1992) argue that investors employ diverse 'trading techniques' that, to some extent, offset one another, and there is no proof that institutions cause prices to deviate from the underlying fundamentals. Empirical support for this claim is presented by Nofsinger and Sias (1999), Wermers (1999), Kim and Wei (2002a and 2002b), Voronkova and Bohl (2005), and Walter and Weber (2006).

3.2. Does herding decrease over time?

When there is a noticeable rise in herding behaviour, investors are regarded as exhibiting greater irrationality. In contrast, decay is found when investors have gained greater expertise and are less influenced by emotions, as stated by Goodfellow et al. (2009). Furthermore, decay might occur due to the increased sophistication of investors, leading to a reduced tendency for herding.

The majority of the examined empirical studies indicate a decline in herding with time. Caparrelli et al. (2004) offer evidence for the Italian stock market, while Caporale et al. (2008) provide evidence for the Greek stock market. According to Sias (2004), similar findings on a reduction in herding behaviour are presented:

'Empirically institutional herding is larger in the 1980s than the 1990s and is primarily driven by a decline in herding in the largest capitalization securities.'

The results presented by Do et al. (2008) for the Finnish market contradict these findings. They contend that the act of herding, taken as a whole, has indeed experienced a rise in magnitude from 1995 to 2004. Choi and Sias (2009) present comparable findings. Holmes et al. (2011) demonstrate distinct variations throughout the months, but do not provide any evidence of a decrease in herding behaviour with time. However, according to Wylie (2005):

'The measured herding increases in the number of managers trading a particular stock over a period and is larger for the smallest and the largest stocks.'

During market crashes, the decline in herd size is caused by the disclosure of previously unknown underlying factors. Regarding the South Korean market, Choe et al. (1999) contend that the herd statistics for large-cap stocks have not reduced, despite a decline in both foreign and U.S. investors, except during the crisis in Korea. However, Hwang and Salmon (2004) argue that the Asian and Russian Crises can be seen as pivotal moments in herding behaviour, as they resulted in a noticeable decrease in herding levels and a shift towards greater efficiency.

3.3. Characteristic herding

Institutions' preferences vary based on their trading tactics. Chang et al. (2000) discovered that the findings on the size do not support the idea that herd behaviour is influenced by either small- or large-caps. However, some scholars present entirely contrasting conclusions.

According to the research conducted by Wermers in 1999, the behaviour of institutions following the crowd is mostly influenced by information cascades. This tendency

is observed more frequently among small capitalization groupings. Furthermore, LSV (1992) discovered that pension funds demonstrate a minimal tendency to follow the crowd when it comes to investing in large-cap stocks, but they display a greater inclination to do so when investing in small-cap stocks. Falkenstein (1996), Chang et al. (2000), Sias (2004), and Voronkova and Bohl (2005) have all obtained comparable findings.

According to theory, small-cap stocks should have higher levels of herding behaviour due to the limited availability of high-quality, company-specific information for small companies and the concerns of fund managers about their reputation. However, Walter and Weber (2006) argue that it is uncertain whether small stocks are more susceptible to herding behaviour. Furthermore, in opposition to the conclusions of LSV (1992) and Wermers (1999), Caparrelli et al. (2004) contend that the level of herding among small-cap stocks is lower than that among large-cap stocks. In addition, Dorn et al. (2008) discovered a predilection for capital letters.

Conversely, according to Wylie (2005), there is a correlation between the number of managers trading a certain stock over time and a growth in measured herding. This effect is more pronounced for both the smallest and largest equities. The author's findings indicate that this outcome might be attributed to either information cascades or reputational herding. The former aligns with the assertions put forth by Scharfstein and Stein (1990), whereas the latter aligns with the findings of Banerjee (1992).

3.4. Herding and market conditions

During periods of significant price fluctuations, stock returns tend to exhibit clustering, indicating a simultaneous movement of stock prices. This phenomenon can be attributed to the collective activity of unskilled and uneducated individual investors (Caporale et al., 2008).

The study conducted by Caparrelli et al. (2004) aligns with the findings of Christie and Huang (1995) and indicates that herding behaviour occurs during periods of extreme market conditions, characterized by both persistent growth rates and high stock levels. Blasco and Ferreruela (2008) provide empirical support for the occurrence of herding behaviour in both calm and turbulent market conditions. In addition, Hwang, and Salmon (2004) present evidence that demonstrates the presence of substantial herd behaviour in both the United States and South Korea, irrespective of the prevailing market conditions as indicated by the volatility of returns and the overall level of market performance.

In contrast, the findings of Chang et al. (2000) indicate that there is little evidence of herding at times of significant market fluctuations in the United States, Japan, and Hong Kong. The rate of growth in return dispersion as a function of the aggregate market return is larger for markets experiencing an upward trend and lower for markets not experiencing an upward trend, based on the nations included in their sample. The outcome for the United States aligns with the findings presented by Christie and Huang (1995). However, Demirer and Kutan (2006) did not discover any evidence of herding in either the Shanghai or Shenzhen Stock Exchanges.

Goodfellow et al. (2009) discovered that herding behaviour is present in all equities during bad markets. Additionally, they noticed that large-cap stocks display 'herding patterns' in both bearish and bullish markets, with the patterns being more pronounced during bearish markets. Regarding South Korea, Chang et al. (2000) argue that there is a somewhat stronger indication of herding behaviour during downward market movements. However, in the context of Japan, there is only a small amount of evidence indicating that investors tend to follow the herd mentality when the market is experiencing a downward trend. During periods of declining stock markets, namely in Portugal, Holmes et al. (2011) discovered that there is a greater tendency for investors to engage in herding behaviour when overall market returns are low, as opposed to when they are moderate or high.

In addition, Tan et al. (2008) argue that herding levels have a considerable impact on equities listed on both the Shanghai Stock Exchange and the Shenzhen Stock Exchange. During periods of bullish markets, heavy trading volume, and a highly unstable market, A-share investors in the Shanghai market exhibit elevated levels of herding. Nevertheless, the herding behaviour of B-share investors does not exhibit such a propensity. In their study, Walter, and Weber (2006) present empirical data supporting the notion that herding behaviour in the German stock market is more pronounced for stocks that are bought by the herd when the market is experiencing an upward trend. Conversely, the levels of herding are higher for stocks that are sold by the herd when the market is in a downward trend. According to Chang et al. (2000), herding is more common in fast increasing market conditions in Taiwan. Do et al. (2008) have discovered a positive correlation between herding behaviour and stock returns, which aligns with the findings of Nofsinger and Sias (1999), Wermers (1999), Sias (2004), and Voronkova and Bohl (2005).

3.5. Herding and types of investors

The motivations of various investment groups to participate in herd behaviour may vary. According to Do et al. (2008), variations in herd levels among investor groups can be attributed to differences in their exposure to capital and the distinct benefits they obtain from adopting herd strategies. According to their hypothesis, individuals are less likely to participate in herding behaviour since their primary objective is to maximize their personal wealth. In addition, they do not participate in reputational herding. However, they are more likely to engage in rational herding than institutional investors. This is a consequence of the knowledge asymmetry arising from the varying financial capacities and commercial connections.

According to Do et al. (2008), there are varying levels of herding among different groups of investors. The study reveals that individual investors have the highest likelihood of engaging in herding behaviour, followed by local institutions and international institutions. Regarding Germany, Dorn et al. (2008) suggest that retail investors have a greater tendency to trade in a coordinated manner compared to the institutions examined by LSV (1992), Wermers (1999), and Wylie (2005). According to Goodfellow et al. (2009), individuals tend to engage in herding behaviour in the Polish stock market during negative periods, but this behaviour reduces as time goes on. However, they typically do not gather in groups while

the market is experiencing an upward trend. Contrary to popular belief, institutions do not follow the market's direction, whether it is up or down.

Regarding institutions, Wermers (1999) contends that the herd behaviour among 'growth-oriented mutual funds' surpasses that of income funds. According to Sias (2004), the categorization of investors affects the extent of herding, with the bank trust departments exhibiting the highest levels. Choi and Sias (2009) discovered that 'mutual funds and independent advisors' tended to engage in herding behaviour that is among the lowest. Furthermore, they contend that the majority of investor groups, namely four out of five, are predisposed to follow institutions that are classified in a similar manner. Holmes et al. (2011) argue that reputational herding is absent. Nevertheless, the leading funds do seem to adhere to their own trades, whereas the other funds typically do not.

3.6. Herding and geographical location of investors

Home bias refers to the tendency of a local investor to hold a greater proportion of their portfolio in domestic assets compared to overseas assets (Shore and White, 2002). According to French and Poterba (1991), this phenomenon may be attributed to the "relative optimism" of domestic investors who choose to invest in their own country. Another plausible reason for this phenomenon is that despite the widespread availability of risk-hedging products globally, investors refrain from utilizing them and instead opt to invest in domestic assets. According to Shore and White (2002), this is since 'agents... are unable to sufficiently spread out their domestic business risk for reasons related to agency'. Edison and Warnock (2004) propose an alternative explanation for the home bias, suggesting that it could be attributed to suboptimal information transmission between countries, where domestic investors have access to superior information compared to overseas investors.

Chaudhuri et al. (1997) presents evidence that supports the idea that the geographical location of investors is important. DeCoster and Strange (1993) (quoted in Hirshleifer and Teoh, 2003) highlighted that these concentrations can occur because of 'spurious agglomeration', which refers to the tendency to imitate the activities of others. Chan et al. (2005) discovered evidence of a tendency for individuals to favor domestic investments in all 48 nations under investigation. Furthermore, Luetje and Menkhoff (2007) demonstrate that even highly knowledgeable experts exhibit a significant preference for domestic investments when making unrestricted foreign asset allocations.

Furthermore, individuals tend to invest in securities that are strongly linked to their geographic areas and personal backgrounds, in addition to favouring domestic investments. Contrary to the common perception, the market orders placed by two distant groups of investors who are herding, either due to "animal spirits" or group psychology, do not show any link. Feng and Seasholes (2004) discovered that investors have a strong tendency to engage in trading activities that are closely associated with each other. The findings indicate that when residing in the same geographical area, there is a positive correlation between the net trades of the two groups. However, when they live in different locations, this correlation becomes negative. Regardless of the region in which they reside, there is a positive link between total trades. This could be attributed to the relationships formed with current employees, the information disseminated through local media outlets, or the

widespread utilization of the company's products. The authors' conclusion states that there is a negative correlation between yields and the net transactions of nearby dwelling investors, and vice versa. Furthermore, the findings of Walter and Weber (2006) demonstrate that there is a positive correlation between the concentration of wealth in a particular location and the occurrence of herding behaviour, particularly in the Frankfurt area.

3.7. Herding and regulatory improvements

Holmes et al. (2011) propose that the levels of deliberate herding will increase due to enhancements in the regulatory framework. This is because the underachievers will have access to high-quality information. Therefore, it would be more convenient to track the activities of the investors who possess reliable information.

They have identified distinct disparities in herd behaviour before and after the Portuguese market joined Euronext. This serves as evidence that enhanced transparency and information dissemination prompt underperforming individuals to imitate successful investors, thus indicating that herding is driven by informational factors. In line with this, Choi and Sias (2009) discovered that the mandatory requirement for investors to file reports through the EDGAR system resulted in a slight increase in institutional herding after 1996. This supports the notion that reputational herding and/or informational cascades play a role in industry herding.

3.8. Herding amongst analysts

According to Shiller and Pound (1989), institutional investors consider the recommendations given by experts and use them as a basis for their buying or selling decisions. Typically, analysts exhibit herd behaviour because of either concerns about their reputation (Scharfstein and Stein, 1990; Trueman, 1994; and Graham, 1999) or their professional aspirations. According to Hong et al. (2000), novice analysts who are worried about their career are more likely to participate in herding behaviour compared to experienced analysts. Furthermore, Clarke and Subramanian (2006) argue that there is a correlation between the analysts' previous performance and the projections they currently make.

Analysts occasionally withhold their own information on 'extreme forecasts' and instead make predictions that align closely with historical earnings expectations (Trueman, 1994). They are motivated to do so because investors perceive them as individuals with strong 'predictive skills'. Consequently, the analysts profit from increased fees for their studies. Furthermore, the prognosticators tend to adhere to the past projections of other experts, resulting in the publication of similar predictions. Put simply, analysts participate in herd behaviour to profit from the evaluation made by investors regarding their ability to make predictions. Conversely, he contends that intelligent forecasters will be less prone to adhere to previous evaluations compared to their less intelligent counterparts.

Graham (1999) contends that in the immediate term, herding behaviour is predicated on scant or negligible information. Furthermore, the findings indicate a significant correlation

between prior information and herding behaviour. Additionally, when high-quality information is accessible, the likelihood of someone engaging in herding behaviour is quite low. Additionally, when investors have a high level of fame, they are more inclined to follow Value Line's proposal in a collective manner. In line with previous research conducted by Bikhchandani et al. (1992) and Trueman (1994), the author proposes that in the long run, newsletters tend to follow the recommendations of Value Line when they have a good reputation, limited expertise, strong prior information, and high correlation with market signals.

According to Welch (2000), the two most recent modifications significantly influence the subsequent analyst's revision. The impact of adjustments increases as they become more recent and more accurate in predicting previous yields. In addition, the author contends that analysts engage in herding behaviour, as seen by Scharfstein and Stein (1990), even when they have limited or no knowledge. This means that their tendency to follow the crowd in making decisions is not driven by basic factors. Furthermore, there is a stronger correlation between trading patterns and consensus when analysts exhibit optimism, indicating bullish market sentiment.

4. METHODOLOGY

This research aims to examine the existence of institutional herd behaviour in the Bulgarian stock market. To achieve this, we adopt the technique proposed by Sias (2004), building upon the arguments presented by Holmes et al. (2011). Furthermore, if the phenomenon is evident, we would like to ascertain its intentionality.

By employing Sias' (2004) approach, we successfully address the constraints of the LSV (1992) metric. The studies we conducted to analyze herd behaviour do not accurately account for biases in their estimations when applied to a concentrated market environment, such as the Bulgarian stock market (Holmes et al., 2011). Moreover, according to their argument, the methodology enables us to quantify the extent of institutional herding 'over consecutive time intervals'. However, to conduct our studies effectively, we need to distinguish between institutions that engage in their own trades and those that engage in the trades of others. Without this distinction, it would not be feasible to use the LSV (1992) technique.

In our paper, we adhere to the notations presented by Holmes et al. (2011), as we find them to be easily comprehensible. To test for the presence of herding, we begin by calculating the cross-sectional regression:

$$A_{k,t} = P_t A_{k,t-1} + £_{k,t} \quad (1)$$

- A_{kt} 'is the standardized fraction of institutions buying a security (k)' in quarter t
- A_{kt-i} 'is the standardized fraction of institutions buying a security (k)' in the previous quarter,
- $£_{kt}$ is the disturbance term.

Beta is a statistical measure that represents the correlation between institutional demand in the current era and the previous period, as explained by Holmes et al. (2011). Furthermore, when the herd statistic is divided into two components, it enables us to distinguish between the influence of investors imitating each other over consecutive time periods and the impact of institutions imitating themselves, such as a buyer (seller) of stock k in the previous period purchasing (selling) more of stock k in the current period (Holmes et al., 2011).

$$\$t = p(Ak,t,\ Ak,t-1)$$

$$\frac{1}{\backslash K-1)a(RawAk,t)a(RawAk,t-iy} \sum_{k=l}^{K} \sum_{n=l}^{Nk,t} \frac{(D_{n,k,t} - R\,aww\,At)(D_{n,k,t-1} - R\,aw\,At-1)}{Nk,t*Nk,t-1}$$

$$\backslash K-1)a(RawAk,t)a(RawAk,t-1)\ \frac{1}{K} \sum_{k=l}^{K} \sum_{n=lm=l.m^n} \frac{(D_{n,k,t} - R\,aw\,At)(D_{m,k,t-1} - R\,aw\,At-1)}{Nk,t*Nk,t-1} \quad (2)$$

where:

- Nk,t 'is the number of institutions actively trading stock k' in quarter t,
- $D_{n,k,t}$ 'is a dummy variable' and $D_{n,k,t} = \begin{cases} 0 & \text{if } n \text{ trader is a seller} \\ 1 & \text{if } n \text{ trader is a buyer} \end{cases}$

$$\frac{\#Institutional\ Buyers\ of\ stock\ k\ In\ quarter\ t}{\#Institutional\ Buyers\ of\ stock\ k\ In\ quarter\ t + \#Institutional\ Sellers\ of\ stock\ k\ In\ quarter\ t}$$

- $a(Raw\ Ak,\ t)$ is 'its cross sectional standard deviation across K securities', and
- $RattAt$ is 'the cross-sectional average raw fraction of institutions buying in quarter t'.

The initial component of the equation represents the portion of the correlation attributed to institutional investors "tracking their own trades from one period to another," while the final component represents the portion of the correlation attributed to institutional investors tracking each other from one period to another (Holmes et al., 2011).

Initially, we investigate the existence of herding in the Bulgarian stock market. To investigate the intentionality of herd behaviour, as demonstrated by Holmes et al. (2011), we analyze the impact of several variables on the degrees of herding. When investors do not intentionally participate in herd behaviour, the fluctuations in herding levels should not be attributed to changes in market direction, overall market volatility, investors' economic attitude, or variations in market volume. Conversely, in cases where herding is deliberate, there must be a correlation between the factors and the degrees of herd behaviour.

5. DATA

For our analysis on herd behaviour in the Bulgarian stock market, we utilize quarterly data on funds' holdings. This data was acquired from the website of the Financial Supervision Commission in Bulgaria. The reports we utilize include the stock's name, the international securities identification number, the stock's index affiliation, its nominal value, the quantity of stocks held in each position, the stock's 'clean' price, and the stock's values at the beginning and end of each quarter. At first, we collected data for 36 Bulgarian funds from their inception to the final quarter of 2010. Upon conducting thorough study, we have determined that just 20 of these funds' reports satisfy the criteria for our analysis. Therefore, we utilize data on the quarterly holdings of 20 funds from the start of 2006 until the final quarter of 2010.

Additionally, to determine the market volatility, we utilize the daily closing prices of the weighted-average price index BG40 spanning from the start of 2006 to the conclusion of 2010. The index comprises the 40 stocks that have experienced the highest trading volumes during the previous six months.

Figure 1. Closing process of BG40

The picture above illustrates both bullish and bearish tendencies in the market over the analyzed time. This allows us to assess the impact of market circumstances on herding levels.

However, we utilize data from the Bulgarian Stock Exchange website to determine the market volume of BG40 throughout the same sample period.

6. EMPIRICAL RESULTS

6.1. Does herd behaviour exist in the bulgarian stock market?

Our examination of herding behaviour among institutional investors in the Bulgarian stock market commences by initially estimating the first equation depicted above, followed

by dividing the first-order autoregressive coefficient (в) into two components. The initial equation depicts the regression analysis conducted over K securities, focusing on the standardized proportion of institutions purchasing security k in the current quarter and its relationship with the standardized proportion of institutions purchasing security k in the previous quarter (Sias, 2004). The second equation enables us to discern the extent to which herding behaviour is attributable to funds imitating their own actions versus imitating the trades of others. Table 6.1 displays the results. The initial column displays the mean correlation coefficient and its corresponding t-statistic, while the second and third columns exhibit the outcomes for dividing the в coefficient.

Table 6.1.: Tests for herding - Buyer if increased position

This table reports the results from Equation (1):

ДкД = ptAK,t-1 + £K,t

Average coefficient (p) ^^сум^сюБ ^^	Partitioned slope coefficient Funds following others' trades	
Panel A: stocks traded by >1 fund		
0.2141 (6.95)*	0.1256 (4.48)*	0.0885 (3.19)*
Panel B: stocks traded by >2 funds		
0.1939 (4.90)*	0.0968 (2.57)*	0.0971 (2.77)*

The cross-sectional correlation between the trades of institutions over consecutive quarters, where stocks are traded by one or more funds, has an average value of 0.2141. This average value is statistically different from zero at the 5% level. When multiple funds engage in stock trading, the correlation between them decreases, but it remains positive and significantly distinct from zero. This indicates a substantial correlation in the demand of institutional investors between consecutive quarters.

Upon analyzing the в coefficient partition, specifically for panel A, it becomes evident that 58.7% of the correlation may be attributed to funds following their own trades, while the remaining 41.3% is a result of funds following trades made by others. Put simply, herd behaviour accounts for 41.3% of the connection. The results closely align with those presented by Holmes et al. (2011) in their study on the Portuguese stock market. The findings from panel B closely align with those presented by Sias (2004), indicating that the correlation is equally influenced by funds engaging in their own transactions (49.9%) and funds replicating the trades of others (50.1%). Ultimately, it can be asserted that there has been a rise in herd levels from 41.3% to 50.1% when equities have been exchanged by two or more funds. This phenomenon might be attributed to the absence of alternative options for a single active fund in a company, preventing it from emulating the actions of other funds due to the lack of a leader to imitate. While it may seem intuitive that herding behaviour is deliberate, we may further investigate this by analyzing the correlation between levels of herding and market direction.

6.2. Herding levels and the market direction

We expect that the market yields, as well as the various market conditions, will be influenced by the levels of herding, particularly the herd behaviour driven by reputational motives. The reason behind this is that institutions gain more advantages by participating in these trading techniques during periods of declining market conditions as opposed to periods of rising market conditions. In negative markets, fund managers often engage in herding behaviour to avoid underperforming their peers and being perceived as low-quality. Conversely, if herding behaviour is not driven by intention, its intensity should not be correlated with market yields.

To determine the impact of market conditions on herd behaviour, as demonstrated by Holmes et al. (2011), we categorize the entire sample into bullish or bearish markets. The proxy we utilize to ascertain the market's condition is the BG40 weighted-average price index. Assuming prices at the end of each quarter, we divide our sample into phases of increase and decrease. Upward (downward) trends occur when the price at the end of a quarter is more (lesser) than the price in the preceding quarter. We apply equation 1 while accounting for the influence of the market direction. The outcomes that we acquire are displayed in Table 6.2. The initial column displays the mean correlation coefficient and its corresponding t-statistic, while the second and third columns offer the outcomes for dividing the в coefficient.

For both Panel A and Panel B, in both market states, the average correlation coefficients (в) are positive and significantly different from zero. This indicates a significant inter-temporal dependence in institutional investors' demand over adjacent quarters, which aligns with the findings in Table 1. In Panel A, where equities are traded by many funds, the correlation coefficient is larger in bullish markets compared to negative markets. Nevertheless, when stocks are exchanged by many funds, the outcomes are 0.1637 and 0.2391, respectively. Put simply, when multiple funds trade stocks, the average correlation coefficient is larger for downward markets compared to upward markets. The observed outcome can be attributed to the impact of herding behaviour, specifically when single-fund-traded stock quarters are eliminated. During periods of market decline, the amount of herding increases from 0.1164 to 0.1618, while the coefficient for 'funds following their own trades' decreases from 0.1572 to 0.1098 during periods of market growth.

Upon partitioning the correlation coefficient, it becomes evident that the coefficients for the funds following their own transactions are consistently close to zero, except in the scenario where the market is in an upward trend and equities are being traded by one or more funds. The latter could be attributed to investors' optimism about the market's performance and their excessive confidence in their ability to consistently exceed, as they have done in the past.

As anticipated, the second component of the correlation coefficient, which indicates the presence of herding among funds, is only statistically significant during periods of market decline. In addition, the herding level increases from 0.1164 in Panel A to 0.1618 when stocks are traded by more than two funds. This phenomenon occurs due to the absence of other active funds in a certain stock, which prevents the fund from emulating the actions of other funds. Furthermore, our findings align with those presented by Holmes et al. (2011).

However, in our situation, the numbers for the herd are significantly more than those for the Portuguese stock market.

Table 6.2.: Tests for herding conditional upon market direction

This table reports the results from Equation (1):

ДкД = ptAK,M + £K,t,

controlling for market direction.

Average coefficient Funds following their own trades Funds following others' trades (P)

UP DOWN MARKET MARKET	UP MARKET	DOWN MARKET	UP MARKET	DOWN MARKET
Panel A: stocks traded by >1 fund				
0.2272 0.1945 (5.72)* (3.80)*	0.1572 (4.05)*	0.0781 (2.21)	0.0700 (185)	0.1164 (2.84)*
Panel B: stocks traded by >2 funds				
0.1637 0.2391 (3.48)* (3.41)*	0.1098 (1.90)	0.0773 (1.92)	0.0539 (1.16)	0.1618 (3.43)*

Ultimately, these findings align with our initial predictions that herding behaviour is deliberate. The findings indicate that herding behaviour may arise as a result of either the investors' desire to maintain their reputation or owing to issues connected to agency.

6.3. Herding and market volatility

Market volatility, as another element, has the potential to influence the levels of herding. Nevertheless, in this scenario, the informational cascades and reputational arguments may have contrasting outcomes, as stated by Holmes et al. (2011). In the event of market instability, investors are likely to exhibit a greater tendency to participate in informational cascades, resulting in increased levels of herding. Conversely, in the absence of significant volatility, it will be simpler to distinguish between managers of low and high quality. In this scenario, the former will align with their high-quality counterparts based on their reputation. Even in calm markets, herd behaviour can still be witnessed. Based on the principles, if herding is false or misleading, its levels should not be correlated with market volatility.

Similar to Holmes et al. (2011), we utilize daily stock returns and apply the methods of Schwert (1989) to compute the quarterly volatility. To determine the impact of volatility on herd behaviour, we categorize the entire sample into two groups: extremely volatile markets and peaceful markets. We apply equation 1 while accounting for the influence of market volatility direction. The findings we have are displayed in Table 6.3.

Table 6.3.: Tests for herding conditional upon market volatility

This table reports the results from Equation (1):

$$Am = Pt^{K,t-1} + {}^{\pounds}K,t,$$

controlling for the direction of market volatility.

Average coefficient (p)	Funds following their own trades		Funds following others' trades		
Volatility Decrease	Volatility Increase	Volatility Decrease	Volatility Increase	Volatility Decrease	Volatility Increase
Part (i): stocks traded by >1 fund					
0.2724	0.1691	0.1432	0.1185	0.1292	0.050
(5.95)*	(4.10)*	(3.94)*	(2.56)*	(3.10)*	6

From the analysis of the initial two columns, it is evident that the average correlation coefficients are positive and statistically significant at the 5% level for both Part (i) and Part (ii), regardless of whether the volatility is increasing or decreasing. These findings indicate that Bulgarian institutional investors' trades are influenced by previous trades over time, independent of market volatility levels. When stocks are exchanged by one or more funds, we observe that the correlation coefficient increases as volatility reduces. The results are inverse when stocks are traded by two or more funds. When volatility increases, we see a larger correlation coefficient between equities traded by several funds compared to stocks traded by one or more funds. Conversely, when volatility drops, the correlation coefficient is lower in the former scenario. In addition, we divide the в coefficient into separate parts.

All coefficients for funds following their own transactions exhibit positive values and are statistically significant at the 5% level, except in the scenario where volatility falls and equities are exchanged by more than two funds.

Conversely, the findings indicate that funds exhibit herd behaviour primarily when there is a drop in volatility. It can be inferred that herding behaviour is deliberate, as evidenced by the increase in herd statistics from 0.1292 when equities are exchanged by one or more funds to 0.1367 when they are traded by two or more funds. This conclusion

aligns with our prior discoveries. The outcome may arise because underperforming individuals are inclined to align themselves with high-caliber bosses for the sake of their reputation.

6.4. Herding and the economic sentiment

The economic sentiment is a comprehensive indicator that reflects the collective sentiments of both consumers and investors regarding the current state of the economy. It is one of the factors that either induce or contribute to institutional herd behaviour.

Lakonishok et al. (1992) propose that fund managers may exhibit herding behaviour when they collectively respond to irrational shifts in individual investor sentiment. De Bondt (1993) asserts that investors form predictions about future stock returns by analyzing the returns they have observed in the past. When equities provide positive yields, investors get confident about future possibilities and tend to have a bullish feeling, resulting in an increase in overall sentiment. Brown and Cliff (2004) contend that institutional investors' net purchases of specific equities serve as an indicator of their level of optimism towards those stocks. Typically, fund managers display herd behaviour on the selling side when investors are optimistic.

Consequently, we hypothesize that the degree of herding is contingent upon the psychological state of investors, specifically their level of optimism or pessimism. We contend that individuals' sentiment is positively correlated with their optimistic beliefs about the market condition, and negatively correlated with their negative beliefs. Consequently, negative beliefs lead to a fall in sentiment and an increase in market volatility. Analogous to the phenomenon of informational cascades, this scenario occurs when investors adhere to identical mood indices. Furthermore, in the absence of purposeful herding, we anticipate that there will be no discernible variation in herding levels irrespective of the economic sentiment.

The findings regarding the relationship between herding and economic attitude are displayed in Table 6.4. The initial column displays the mean correlation coefficient and its corresponding t-statistic, while the second and third columns exhibit the outcomes for dividing the в coefficient. We investigate both the scenarios where sentiment rises and where it declines on a quarterly basis.

We observe a substantial inter-temporal correlation between institutional demand and sentiment, regardless of whether sentiment increases or decreases. For both Part (i) and Part (ii), the correlation coefficients exhibit a positive relationship with the drop in sentiment. This aligns with our past research findings on the relationship between market direction, volatility, and sentiment.

Next, we proceed by dividing the average correlation coefficient p into smaller parts. When sentiment increases and equities are traded by one or more funds, we find that the correlation coefficient's importance is primarily attributed to funds following their own trades. Conversely, when sentiment declines, a larger percentage of the association can be attributed to the collective conduct of the funds (54.8%). When multiple funds engage in stock trading, noticeable coefficients that deviate from zero are noticed during periods of

declining sentiment. Furthermore, the autocorrelation of institutional demand is evenly divided between funds that track their own trades (49.4%) and funds that track the activities of others (50.6%).

Table 6.4.: Tests for herding conditional upon economic sentiment

This table reports the results from Equation (1):

Дм = РДк.м + £М,

controlling the direction of market volatility.

л	«- 4 Funds following their own	^ c ,,	> * ^ Average coefficient (p)	t	н
	Funds following others' trades				

Sentiment Sentiment Decrease Increase	Sentiment Decrease	Sentiment Increase	Sentiment Decrease	Sentiment Increase
Part (i): stocks traded by >1 fund				
0.2387 0.1895	0.1079	0.1432	0.1308	0.0463
(4.51)* (5.82)*	(2.90)*	(3.32)*	(2.77)*	-1.84
Part (ii): stocks traded by >2 funds				
0.2279 0.1599	0.1126	0.081	0.1153	0.0788
(3.88)* (2.97)*	(2.60)*	-1.27	(2.63)*	-1.39

The results for the second component of equation 2, namely the portion representing the correlation resulting from funds following other funds, exhibit statistical significance alone in the context of declining sentiment. This aligns with our prior discoveries indicating that funds in the Bulgarian stock market actively participate in deliberate herding behaviour.

6.5. Herding and market volume

Our paper establishes a correlation between market volume and liquidity risk in the Bulgarian stock market.

Pastor and Stambauch (2011) contend that liquidity is a comprehensive and elusive notion that primarily refers to the capacity to swiftly trade substantial quantities at a minimal expense, without causing significant price fluctuations. The impact of liquidity on securities prices is widely acknowledged. Dorn et al. (2008) suggest that individual investors have the potential to influence price formation by either demanding liquidity from or supplying liquidity to other market participants through their collective orders. Liquidity can forecast future stock returns, both at the individual company level and on a broader scale. The relationship between the sensitivity of a security to liquidity and the necessary return by the holder is logical. As the sensitivity to liquidity increases, the holder of the security will demand a larger return. If an institution has such securities, it is more likely to sell them when there is a lack of liquidity. Consequently, the expenses linked to the liquidation are elevated. Additionally, according to Pastor and Stambauch (2011), there is a correlation between weaker liquidity and more pronounced reversals in volume-related returns.

Given that liquidity has an impact on the values of assets, it is reasonable to anticipate that it is also connected to herding behaviour. Falkenstein (1996) (quoted in Wermers, 1999) contends that funds tend to cluster in stocks that have lower trading volume or stocks that carry less risk. Furthermore, we anticipate that if herd behaviour is observed, it may be attributed to either informational cascades or career concerns among fund managers.

Table 6.5.: Tests for herding conditional upon market volume

This table reports the results from Equation (1):

$$AK,t = ptAM-1 + £K,t,$$

controlling for the direction of market volatility.

Average coefficient (в)		Funds following their own trades		Funds following others' trades	
Volume Decrease	Volume Increase	Volume Decrease	Volume Increase	Volume Decrease	Volume Increase
Part (i): stocks traded by >1 fund					
*682 75)**	*0.2600 (5.45)**	*0.1269 (3.47)**	*0.1242 (2.79)**	0.041 3	0.1358 (2.92)*
				0.1317 (4.25)*	

The findings regarding the relationship between herding and market volume are displayed in Table 6.5. The market volume refers to the data acquired from the Bulgarian Stock Exchange website specifically for the BG40 index. We compute it on a quarterly basis by aggregating all daily volume observations for the quarter. The initial column displays the mean correlation coefficient and its corresponding t-statistic, while the second and third columns offer the outcomes obtained by dividing the p coefficient. We analyze the market volume on a quarterly basis, considering both its rises and declines.

Confirming our prior findings, we have discovered substantial intertemporal correlation in the demand of institutional investors throughout consecutive quarters. All the mean correlation coefficients exhibit positive values and are statistically distinct from zero. When the volume decreases, we observe a rise in the autocorrelation of institutional demand from 0.1682 (when equities are traded by 1 or more funds) to 0.2461 (when stocks are exchanged by 2 or more funds). Conversely, when volume grows, the average correlation coefficient falls.

Upon analyzing the correlation coefficient, it is evident that the coefficients for funds that follow their own trades exhibit positive and statistically significant values in both Part (i)

and Part (ii), regardless of the volume. However, an exception arises when the volume increases and stocks are traded by two or more funds. We believe that this phenomenon could be attributed to information asymmetry, whereby funds exhibit distinct reactions to positive and negative news.

The outcomes of the funds, which track the trades of others, align with our initial premises. Observations indicate that herding behaviour occurs exclusively when there is an increase in trading volume, namely when equities are being traded by one or more funds. As previously mentioned, this could be attributed to the existence of informational cascades. As multiple funds engage in stock trading, we observe the occurrence of the 'crowd effect' as the trading volume declines. Additionally, 53.5% of the average correlation coefficient can be attributed to the phenomenon of 'funds following others' trades', while the remaining portion is a result of funds following their own trades. These findings could be associated with the career anxieties of fund managers or the correlation between their compensation and the success of their fund in comparison to a benchmark counterpart. Regardless of the scenario, we can deduce that herd conduct is deliberate, aligning with our past discoveries.

7. CONCLUSION

Considering the varied outcomes on the prevalence of herd behaviour in other markets, we conduct a univariate analysis to determine its occurrence in the concentrated Bulgarian stock market. To achieve this objective, we utilize quarterly data on the portfolios of all 20 funds in our study and apply the methods suggested by Sias (2004). Initially, we examine whether there is a correlation between the demand of institutional investors across consecutive quarters. Next, we partition the correlation coefficient to determine the portion of this association that can be attributed to herd behaviour. Furthermore, we examine whether the extent of herding is influenced by factors such as market direction, market-wide volatility, economic sentiment, and market volume.

The findings from our testing provide conclusive proof of the presence of herd behaviour in the Bulgarian stock market. In addition, we observe that herding behaviour is contingent upon the direction of the market, overall market volatility, economic sentiment, and market volume. To clarify, herding behaviour is deliberate among Bulgarian institutional investors. Herding occurs during periods of market decline, reduced volatility, and declining economic sentiment. When examining the relationship between herding behaviour and market volume, we observe that herding occurs when equities are traded by one or more funds, particularly during periods of increased market volume. Conversely, when multiple funds are actively involved in a company, herd behaviour occurs when market volume declines. Our analysis suggests that herding behaviour is driven by reputational incentives, agency-related anxieties, and the propagation of informational cascades.

Subsequent investigations have the potential to enhance our own research in multiple ways. An approach to accomplish this is by conducting a multivariate analysis to examine the collective impact of the factors that we have already accounted for. Additionally, researchers may find it intriguing to examine whether there have been any fluctuations in herding levels over time, specifically whether there has been a rise or decline.

References

1. Banerjee, A. V. (1992). "A Simple Model of Herd Behavior." The Quarterly Journal of Economics, Vol. 107 (3), pp.: 797-817.
2. Bikhchandani, S. and Sharma, S. (2000). "Herd Behavior in Financial Markets." IMF Staff Papers, Vol. 47 (3), pp.: 279-310.
3. Blasco, N. and Ferreruela, S. (2008). "Testing Intentional Herding in Familiar Stocks: An Experiment in an International Context." Journal of Behavioral Finance, Vol. 9 (2), pp.: 72-84.
4. Brussarski, Rumen (2007). "Theory of Public Finance.", Sofia: UNWE.
5. Caparrelli, F., D'Arcangelis, A. M. and Cassuto, A. (2004). "Herding in the Italian Stock Market: A Case of Behavioral Finance." Journal of Behavioral Finance, Vol. 5 (4), pp.: 222-230.
6. Caporale, G., Maria, Economou, F. and Philippas, N. (2008). "Herding behaviour in extreme market conditions: the case of the Athens Stock Exchange." Economics Bulletin, Vol. 7 (17), pp.: 1-13.
7. Chan, K., Covrig, V., and Ng, L. (2005). "What determines the domestic bias and foreign bias? Evidence from mutual fund equity allocations worldwide." Journal of Finance, Vol. 60 (3), pp. :1495-1534.
8. Chang, E. C., Cheng, J. W. and Khorana, A. (2000). "An examination of herd behavior in equity markets: An international perspective." Journal of Banking & Finance, Vol. 24 (10), pp.: 1651-1679.
9. Chaudhuri, S., Chang, A. and Jayaratne, J. (1997). "Informational externalities and the branch location decisions of banks: An empirical analysis." Columbia University and Federal Reserve Bank of New York. Working Paper.
10. Choe, H., Kho, B.-C. and Stulz, R. M. (1999). "Do foreign investors destabilize stock markets? The Korean experience in 1997." Journal of Financial Economics, Vol. 54 (2), pp.: 227-264.
11. Choi, N. and Sias, R. W. (2009). "Institutional industry herding." Journal of Financial Economics, Vol. 94 (3), pp.: 469-491.
12. Christie, W. G. and Huang, R. D. (1995). "Following the Pied Piper: Do Individual Returns Herd around the Market?" Financial Analysts Journal, Vol. 51 (4), pp.: 31-37.
13. Clarke, J. and Subramanian, A. (2006). "Dynamic forecasting behaviour by analysts: Theory and evidence." Journal of Financial Economics, Vol. 80 (1), pp. : 81-113.
14. Demirer, R. and Kutan, A. M. (2006). "Does herding behavior exist in Chinese stock markets?" Journal of International Financial Markets, Institutions and Money, Vol. 16 (2), pp.: 123-142.
15. Demirer, R., Kutan, A. M. and Chen, C.-D. (2010). "Do investors herd in emerging stock markets?: Evidence from the Taiwanese market." Journal of Economic Behavior & Organization, Vol. 76 (2), pp.: 283-295.
16. Devenow, A. and Welch, I. (1996). "Rational herding in financial economics." European Economic Review, Vol. 40 (3-5), pp.: 603-616.
17. Do, V., Guo-Sze Tan, M. and Westerholm, P. J. (2008). "Correlated Trading in Concentrated Market." Journal of International Finance and Economics, Vol. 8 (4).
18. Dorn, D., Huberman, G. and Sengmueller, P. (2008). "Correlated Trading and Returns." The Journal of Finance, Vol. 63 (2), pp.: 885-920.
19. Edison, H. and Warnock, F. (2004). "U.S. Investors' Emerging Market Equity Portfolios: A Security-Level Analysis." *Review of Economics and Statistic.*
20. Falkenstein, E. (1996). "Preferences for Stock Characteristics as Revealed by Mutual Fund Portfolio Holdings." The Journal of Finance, Vol. 51 (1), pp.: 111-135.
21. Fama, E. (1970). "Efficient Capital Markets: A Review of Theory and Empirical Work." The Journal of Finance, Vol. 25 (2), pp.: 383-417.
22. Feng, L. and Seasholes, M. S. (2004). "Correlated Trading and Location." The Journal of Finance, Vol. 59 (5), pp.: 2117-2144.
23. French, K. and Poterba, J. (1991). "Investor Diversification and International Equity Markets." American Economic Review, Vol. 81, pp.: 222-26.
24. Gervais, S. (1996). "Market microstructure with uncertain information precision: a multiperiod analysis." Wharton School, University of Pennsylvania.

25. Goodfellow, C., Bohl, M. T. and Gebka, B. (2009). "Together we invest? Individual and institutional investors' trading behaviour in Poland." International Review of Financial Analysis, Vol. 18 (4), pp.: 212-221.
26. Graham, J. R. (1999). "Herding among Investment Newsletters: Theory and Evidence." The Journal of Finance, Vol. 54 (1), pp.: 237-268.
27. Griffin, J. M., Harris, J. H., and Topaloglu, S. (2003). "The dynamics of institutional and individual trading." Journal of Finance, Vol. 58 (6), pp.: 2285-2320.
28. Grinblatt, M., Titman, S. and Wermers, R. (1995). "Momentum Investment Strategies, Portfolio Performance, and Herding: A Study of Mutual Fund Behavior." The American Economic Review, Vol. 85 (5), pp.: 1088-1105.
29. Henker, J., Thomas Henker and Mitsios, A. (2006). "Do investors herd intraday in Australian equities?" International Journal of Managerial Finance, Vol. 2 (3), pp.: 196 - 219.
30. Hirshleifer, D. and Teoh, S., Hong (2003). "Herd Behaviour and Cascading in Capital Markets: a Review and Synthesis." European Financial Management, Vol. 9 (1), pp.: 25-66.
31. Holmes, P., Kallinterakis, V. and Ferreira, M. P. L. (2011). "Herding in a Concentrated Market: a Question of Intent." European Financial Management, Vol. pp.: no-no.
32. Hong, H. G., Kubik, J. and Solomon, A. (2000). "Security analysts' career concerns and herding of earning forecasts." RAND Journal of Economics, Vol. 31, pp.: 121-144.
33. Hung, W., Lu, C.-C. and Lee, C. F. (2010). "Mutual fund herding its impact on stock returns: Evidence from the Taiwan stock market." Pacific-Basin Finance Journal, Vol. 18 (5), pp.: 477-493.
34. Hwang, S. and Salmon, M. (2004). "Market stress and herding." Journal of Empirical Finance, Vol. 11 (4), pp.: 585-616.
35. Keynes, J.M. (1936). The General Theory of Employment, Interest and Money. London: MacMillan.
36. Kim, Kenneth A. and Nofsinger, John R. (2005). "Institutional Herding, Business Groups, and Economic Regimes: Evidence from Japan." The Journal of Business, Vol. 78 (1), pp.: 213-242.
37. Kim, W. and Wei, S.-J. (2002a). "Foreign portfolio investors before and during a crisis." Journal of International Economics, Vol. 56 (1), pp.: 77-96.
38. Kim, W. and Wei, S.-J. (2002b). "Offshore investment funds: monsters in emerging markets?" Journal of Development Economics, Vol. 68 (1), pp.: 205-224.
39. Lakonishok, J., Shleifer, A. and Vishny, R. W. (1992). "The impact of institutional trading on stock prices." Journal of Financial Economics, Vol. 32 (1), pp.: 23-43.
40. Liao, T.-L., Huang, C.-J. and Wu, C.-Y. (2011). "Do fund managers herd to counter investor sentiment?" Journal of Business Research, Vol. 64 (2), pp.: 207-212.
41. Luetje, T., and Menkhoff, L. (2007). "What Drives Home Bias? Evidence from Fund Managers' Views." International Journal of Finance and Economics, Vol. 12 (1), pp.: 2135.
42. Maug, E., and Naik, N. (1996). "Herding and Delegated Portfolio Management." London Business School, Mimeo.
43. Nofsinger, J. R. and Sias, R. W. (1999). "Herding and Feedback Trading by Institutional and Individual Investors." The Journal of Finance, Vol. 54 (6), pp.: 2263-2295.
44. Radelet, S. and Sachs, J. (1998). "The onset of the East Asian financial crisis." Unpublished Working Paper. Harvard University.
45. Roll, R. (1992). "A mean/variance analysis of tracking error." Journal of Portfolio Management, Vol. 18, pp.: 13-22.