

# Herd Behavior in Equity Markets - The International Evidence

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## Abstract

The paper provides evidence about herd behavior in financial market. Explains psychology of herd behavior, the conditions and the causes under which her behavior occurs in equity market. Work is an overview of the recent theoretical and empirical researches on herd behavior in global financial market, trying to answer the question, does the herd behavior exist in equity market?

**Keywords:** financial market, herd behavior, investor psychology, market efficiency

**JEL:** G1, G14, D8

## Introduction

Herd behavior describes how individuals in a group can act together without planned direction. The term pertains to the behavior of animals in herds, flocks, and schools, and to human conduct during activities such as stock market bubbles and crashes, street demonstrations, sporting events, religious gatherings, episodes of mob violence and even everyday decision making, judgment and opinion forming.

Herding is one of the most important concepts in cognitive economics, especially as applied to financial markets.

The literature reveals many theoretical approaches to herding:

### 1) Social psychological approaches: imitation processes, fads and fashions

Social psychological theory of herding. Shiller, Fischer & Friedman (1984), Shiller (1990, 2000, 2001) describes the social dynamics of a stock market bubble as a combination of social enthusiasm, excessive optimism, and selective attention: "The high demand for the asset is generated by the public memory of high past returns, and the optimism those high returns generate for the future." His "fads and fashions" model posits that "...investors have over-confidence in a complex culture of intuitive judgments about expected future price changes, and an excessive willingness to act on these judgments" (Shiller, 2001). Though often lumped in with the information cascade theories of herding, papers about "reputational herding" are also categorized here as social psychological. Reputational herding is usually a model of heterogeneous agents in interaction, with younger, inexperienced agents competing for a good reputation in society against older, more experienced agents who are assumed to have superior knowledge or skill.

### 2) Information theory and cybernetic approaches: information cascades, positive feedback

"An informational cascade occurs when it is optimal for an individual, having observed the actions of those ahead of him, to follow the behavior of the preceding individual without regard to his own information" (Scharfstein & Stein, 1990).

### 3) Ethological approaches: flocking, migrating birds, ant recruitment, etc.

Ethology, the study of animal behavior, is the source of metaphors and analogies for this model of herding. Since their primary commonality is a focus on animal behavior and its analogues in human herding behavior, rather than a focus on a single set of theoretical assumptions about the dynamics of herding (Kirman, 1993). Kirman approvingly cites studies in which herding behavior is seen as "a source of endogenous fluctuations in the price level in asset markets" and feels that this "explanation is particularly appealing when... it does not rely on exogenous shocks to the system" (p138). Kirman's model does not endorse the equilibrium theory of neoclassical economics, since "there is no convergence to any particular state" (p147).

### 4) Econophysics approaches: catastrophe theory, sandpile analogies, self-organized criticality, etc.

The ethologists compare human systems to non-human systems, but not to nonliving systems. The econophysics models of herding include those based on catastrophe theory, self-organized criticality, and sandpile models. While these variants on physics-based theory have important theoretical differences, they share the features outlined in the econophysics model (Danchin, Giraldeau, Valone, & Wagner, 2004).

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### 5) Medical model approaches – disease and infection analogies: contagion, etc.

A unique study that serves as an exemplar of the medical model of herding is that conducted by Morgan and O'Grada (2000), using an analysis of historical banking data. In this study, factors such as size of bank account and years since immigration to the U.S. predict some of the variance as to whether investors panicked and withdrew all their money during two bank runs in the 1850s, but by far the greatest part of the variance is predicted by an aspect of their "social network," namely their county of origin in Ireland. This social contagion study makes sophisticated use of social network theory, often used by medical epidemiologists.

### 6) The socionomic approach

The socionomic theory of herding Prechter and Robert (1999, 2001, 2003) is unique in describing a model of unconscious, prerational herding behavior that posits endogenous dynamics that have evolved in homogeneous groups of humans in contexts of uncertainty, while eschewing the traditional economic assumptions of equilibrium and utility-maximization. Socionomic theory captures the process of decision-making under uncertainty in a manner that reflects the psychological reality of the individual's behavior while offering probabilistic prediction of the form-determined path of development of the social whole. According to socionomic theory, when people are uncertain, they default to a herding impulse developed through evolution. When humans do not know, they are impelled to act as if others do, and because sometimes others actually do know, herding increases the overall chance of survival. Because herds are ruled by the majority, not the wise, financial market trends are based on little more than the shared mood of investors – how they feel – which is the province of the prerational areas of the brain mediating emotional responses, not rational ones. Socionomic theory has an answer: the context of uncertainty is the boundary between instinctive and rational behavior, as it is the boundary between financial and economic behavior. The social dynamic generating financial behavior is unconscious herding as conceptualized in socionomic theory.

### Herd behavior in financial markets

In recent years, there has been much interest, about theoretical and empirical researches concerning trading in financial markets characterized by herd behavior.

Some specialists express concern that herding by market participants exacerbates volatility, destabilizes markets, and increases the fragility of the financial system. Investors may "herd" (converge in behavior) or "cascade" (ignore their private information signals) in deciding whether to participate in market, what securities to trade, and whether to buy or sell (Hirshleifer & Teoh, 2003). For an investor to imitate others, he must be aware of and be influenced by others' actions.

Intuitively, an individual can be said to herd if he would have made an investment without knowing other investors' decisions, but does not make that investment when he finds that others have decided not to do so. Alternatively, he herds when knowledge that others are investing changes her decision from not investing to making the investment. There are several reasons for a investor to be influenced into reversing a planned decision after observing others. First, others may know something about the return on the investment and their actions reveal this information. Second, and this is relevant only for money managers who invest on behalf of others, the incentives provided by the compensation scheme and terms of employment may be such that imitation is rewarded. When investors are influenced by others' decisions, they may herd on an investment decision that is wrong for all of them.

If investors take a wrong decision, then with arrival of new information, they are likely to eventually change their decision starting a herd in the opposite direction. This, in turn, increases volatility in the market. According to the definition of herd behavior given above, herding results from an obvious intent by investors to copy the behavior of other investors.

There are several potential reasons for rational herd behavior in financial markets. The most important of these are: imperfect information, concern for reputation and compensation structures and herding among analysts.

### Information based herding and cascades

Individuals can observe each other's actions but not the private information or signals that each player receives. (Even if individuals communicate their private information to each other, the idea that "actions speak louder than words" provides justification for this assumption.) If individuals have some view about the appropriate course of action, then inferences about a player's private information can be made from the actions chosen. Herd behavior may arise in this setting. Moreover, such behavior is fragile, in that it may break easily with the arrival of a little new information; and it is idiosyncratic, in that random events combined with the choices of the first few players determine the type of behavior on which individuals herd (Hwang & Salmon, 2004).

Such informational herding arises in situations where people observe the actions of others, derive information from them and then, seemingly disregarding their own information, follow the majority action.

"An invest cascade starts with the first individual who finds that the number of predecessors who invested exceeds the predecessors who rejected by two". This individual and all subsequent individuals, acting rationally, will then invest regardless of what their private signal tells them about the value of the investment. Once a cascade starts, an individual's action does not reflect her private information. Consequently, once a cascade starts, the private information

of subsequent investors is never included in the public pool of knowledge (Lemieux, 2004).

Informational cascades are the most basic sort of cascades. In them, people form their beliefs using information obtained by observing the behavior or opinions of others.

According to Zhou and Lai (2009) about Hong Kong stock market examine whether investors are more likely to herd when there is a higher proportion of information based trading, thus leading to an informational cascade. Summarize findings on the herding phenomenon a total of 96,381 positive (implying herding) and 861 negative (no apparent herding) stock day herd measurements in the 523 trading-day sample. In general, herding is stronger in 2003 than in 2004. A decrease in the measures accompanied by an increase in trading volume suggests that investors herd more often at times when market sentiment is poor. More herding takes place in the financial sector and the property and construction sector, which are Hong Kong two most important industries, than in other sectors. This phenomenon gives credence to the hypothesis that investor sentiment is highly reliant on dominant industries and that investors are more inclined to follow others when making trading decisions in order to play safe. Consistent with the informational cascade empirical results suggest that when there are different levels of information precision in the market, investors with less precise information tend to herd with fashion leaders that are perceived as having better information. Hence, there can be concluded that informational cascading exists, at least in the case of the Hong Kong stock market.

### Reputation and compensation based herding

Reputation or, more broadly, career concerns arise because of uncertainty about the ability or skill of a particular manager. The basic idea is that if an investment manager and her employer are uncertain of the manager's ability to pick the right stocks, conformity with other investment professionals preserves the fog—that is, the uncertainty regarding the ability of the manager to manage the portfolio. This benefits the manager and if other investment professionals are in a similar situation then herding occurs.

If an investment manager's compensation depends on how her performance compares with that of other similar professionals, then this distorts the agent's incentives and he ends up with an inefficient portfolio. It may also lead to herd behavior.

According to Villatoro (2009) about to identify conditions under which equilibria exist such that intermediaries with good reputation invest in private information, whereas those with poor reputation herd.

Financial intermediaries (FI) play an important role in the economy as they channel resources from agents with liquidity surpluses towards those with liquidity needs ignoring private information and making decisions that differ from those of others to signal their type predicts that as the initial reputation of agents im-

proves they will herd more as they want to avoid a large drop in profits associated with a fall in reputation, which occurs if an agent's decision is different from others'. Villatoro found that, under certain conditions, there are equilibria in which FI with high reputation are prone to invest in information, whereas those with poor reputation will tend to imitate other FI's portfolio decisions. Based on the results obtained by research, he predicts: There will be a negative relationship between herd behavior and the FI's reputation; a positive relation between the FI's fees and his reputation; cross-sectional dispersion in fees charged by the FI; and there will be variation in the time series of fees charged by FI.

### Herding among investment analysts

The main role of the analysts is to provide earnings forecasts. The professionals as the bankers, the financial advisers as well as the individual investors rely on these forecasts to establish their decisions. To really accomplish this role the analysts' earnings forecasts must be unbiased and accurate.

Youssef and Rajhi (2009) using a sample of 262 French firms over the period 1996-2000. Finds that experienced analysts are more likely to avoid herding behaviour, and provide bold forecasts than inexperienced analysts. Author explains this result by the fact that inexperienced analysts are more likely to lose their job after providing inaccurate or bold forecast assuming that forecasts behaviour (herd or bold) differs between inexperienced (young) and experienced (older) security analysts. Since more experienced analysts have been more confident, they probably issue bold forecast. Inexperienced analysts are more likely to exhibit herding behaviour than more experienced. Inexperienced analysts who issue inaccurate or bold forecasts are more likely to leave profession than experienced analysts. Youssef and Rajhi think that herding behavior decreases with brokerage size. First large brokerage houses help their analysts by providing them different sources of information such as databases, forecasting tools, forecasts technology. Also larger brokerage houses attract efficient analysts. Then, if larger brokers make available to their analysts several sources of information, therefore analysts will publish forecasts that reflect their own information without the others' decisions have an effect on their behavior. Authors conclude that analysts who work for larger brokerage houses have less incentive to herd.

Bernhardt, Campello, and Kutsoati (2006), develop a test for herding in forecasts by professional financial analysts that is robust to (a) correlated information amongst analysts; (b) common unforecasted industry-wide earnings shocks; (c) information arrival over the forecasting cycle; (d) the possibility that the earnings that analysts forecast differ from what the econometrician observes; and (e) systematic optimism or pessimism among analysts. Found that forecasts are biased, but that analysts do not herd. Instead, analysts "anti-herd": Analysts systematically

issue biased contrarian forecasts that overshoot the publicly-available consensus forecast in the direction of their private information.

### Herding in equity markets - International evidence

Large stock market trends often begin and end with periods of frenzied buying (bubbles) or selling (crashes). Many observers cite these episodes as clear examples of herding behavior that is irrational and driven by emotion - greed in the bubbles, fear in the crashes. Individual investors join the crowd of others in a rush to get in or out of the market (herd behaviour, n.d.).

According to Chang, Cheng, and Khorane (2000) about examining the investment behavior of market participants within different international markets (US, Hong Kong, Japan, South Korea, and Taiwan), specically with regard to their tendency to exhibit herd behavior. Found no evidence of herding on the part of market participants in the US and Hong Kong and partial evidence of herding in Japan. However, for South Korea and Taiwan, the two emerging markets significant evidence of herding was documented. The results are robust across various size-based portfolios and over time. Furthermore, macroeconomic information rather than firm-specific information tends to have a more significant impact on investor behavior in markets which exhibit herding. In all five markets, the rate of increase in security return dispersion as a function of the aggregate market return is higher in up market, relative to down market days. An important investment implication of finding is that when investing in an economy where participants tend to herd around the market consensus, one needs a larger number of securities to achieve the same degree of diversification than in an otherwise normal market. A more challenging question to ask is what makes South Korea and Taiwan diferent from the US and Hong Kong?

The diferences in herd behavior may be the result of a relatively high degree of government intervention, either through relatively frequent monetary policy changes or through large direct buy or sell orders in the emerging financial markets. The market can be improved by enhancing the quality of information disclosure. In the presence of inefficient information disclosure, market participants will tend to lack fundamental information on firms, which may consequently cause them to trade based on other signals.

Caporale, Economou, and Phillipou (2008) examines herd behaviour in extreme market conditions using data from the Athens Stock Exchange. Results based on daily, weekly and monthly data indicate the existence of herd behaviour for the years 1998-2007. Evidence of herd behaviour over daily time intervals is much stronger, revealing the short-term nature of the phenomenon. When the testing period is broken into semi-annual sub-periods, herding is found during the stock market crisis of 1999. In September 1999 there were 145.817 new investor shares. The sharp upward

and downward movements in returns could then be attributed to herd behaviour, reflecting the massive trading of new, inexperienced and uninformed individual investors.

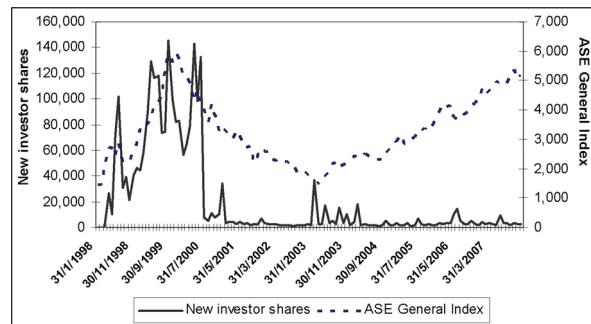


Figure 1. ASE General Index and new investor shares (monthly data, 1998-2007).

Source: Caporale, G. M., Economou, F., Philippas, N. (2008). *Herd Behaviour in Extreme Market Conditions: The Case of The Athens Stock Exchange*.

Research shows the existence of significant herd behaviour both during and after the stock market crisis of 1999.

Chiang and Zheng (2010) examines herding behavior in global markets, by applying daily data for 18 countries from May 25, 1988, through April 24, 2009. Authors find evidence of herding in advanced stock markets (except the US) and in Asian markets. No evidence of herding is found in Latin American markets. Evidence suggests that stock return dispersions in the US play a significant role in explaining the non-US market's herding activity. With the exceptions of the US and Latin American markets, herding is present in both up and down markets, although herding asymmetry is more profound in Asian markets during rising markets. Evidence suggests that crisis triggers herding activity in the crisis country of origin and then produces a contagion effect, which spreads the crisis to neighboring countries. During crisis periods supportive evidence for herding formation in the US and Latin American markets was found. In particular, research designates herding in the Mexican and Argentine stock markets, respectively, when the 1994 Mexican and 1999 Argentine crises took place. Otherwise, no evidence of herding is found in these Latin American countries over the entire sample period. The question then is: why is herding present in the Asian and advanced markets but not in the Latin American markets? One possible explanation is that due to global information processing, investors in each Asian market tend to follow the news and form their investment strategies based on those of the institutional investors on Wall Street, which is considered to be a center for processing and disseminating global investment information. Thus, if investors in global markets believe that news from Wall Street is valuable and they form

a consensus about investment decisions, herding formation follows.

## Conclusion

In a simple model of herd behavior, Individuals' decision is affected by what other people are doing. Herding: everyone does what everyone else is doing. What other people are doing reflects information. This information may dominate a player's own private information. In the herding equilibrium, all the people after the third person ignore their own information in decision making. If person gets a false signal, all the population will choose the wrong asset. Herding results from the fact that a person's decision is not a sufficient statistic of his information.

More specifically individuals acting sequentially on the basis of private information and public knowledge about the behavior of others, may end up choosing the socially undesirable option.

An examination of herding levels among firms with different investment objectives shows that growth-oriented firms have a greater tendency to herd than income-oriented funds. This could be because growth-oriented firms trade and hold a larger proportion of growth stocks, many of which are small caps on whom public information is harder to obtain and analyze and, as a consequence, there is greater scope for herding behavior.

Most of the studies examining the empirical evidence on herding and its effects have been done in the context of developed countries. In these countries, the evidence suggests that participants in financial market do not exhibit significant herd behavior and that the tendency to herd is highly correlated with a manager's tendency to pursue momentum investment strategies. Whether such positive feedback or momentum strategies are efficient depends on how fast new information is incorporated into market prices. More empirical work needs to be done on emerging markets where, as the evidence suggests, one is likely to find a greater tendency to herd. In these markets, where the environment is relatively bold because of weak reporting requirements, lower accounting standards, lax enforcement of regulations, and costly information acquisition, information cascades and reputational herding are more likely to arise. Also, because information is likely to be revealed and absorbed more slowly, momentum investment strategies could be potentially more profitable.

There is always an information asymmetry between any borrower and lender, and some element of an agency problem when owners of funds delegate investment decisions to professional managers. Therefore, there will always be some possibility of informational cascades and of reputation and compensation-based herding. Disclosure rules, timely provision of data, and better-designed compensation contracts may make markets and institutions more transparent. Greater transparency makes it more likely that prices will closely track fundamentals; it

does not necessarily imply that transparency will reduce price volatility. The private information available to investors, if it were to become public, would yield a much more accurate forecast of the true value of the investment. Thus information-based cascades are born quickly, idiosyncratically, and shatter easily. Consequently, herd behavior will not arise when the price adjusts to reflect available information. Under these assumptions, the stock market is informationally efficient. The price reflects fundamentals and there is no mispricing.

*"It is better to fail conventionally than to succeed unconventionally"*

John Maynard Keynes.

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