



## Herding and excessive risk in the American stock market: A sectoral analysis



Houda Litimi<sup>a</sup>, Ahmed BenSaïda<sup>b,\*</sup>, Omar Bouraoui<sup>b</sup>

<sup>a</sup> ISG, Tunis University, Bouchoucha, Bardo 2000, Tunisia

<sup>b</sup> LaREMFIQ – IHEC, Sousse University, B.P. 40 Sahloul 3, Sousse 4054, Tunisia

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### ABSTRACT

This paper aims to test whether herding behavior is a driving force of excessive market volatility and increasing bubbles in the US stock market at a sectoral level. Trading volume turnover and investors' sentiment are ubiquitous factors besides market return to fuel herding movement in most sectors. Our sample covers all listed companies in the American stock market over four major turmoil periods. Granger causality test shows that herding is a vital ingredient to increasing bubbles in some sectors, but not all. Moreover, herding and trading volume have an inhibiting effect on both overall and in-sector market volatility in large markets, as opposed to concentrated markets commonly studied in the literature.

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## 1. Introduction

Understanding the dynamics of financial markets has become a real challenge to researchers. Despite the exhaustive effort to explain asset prices' movement, financial markets remain enigmatic and defy the most precise and predictive classical models. The two documented theories in the literature, associated with dynamic movements in stock returns, are the discount rate and the rational bubble. The discount rate theory assumes that the high volatility observed in financial markets results from changes in the discounted dividend rate (Campbell and Shiller, 1988). In fact, this hypothesis claims that the fluctuation in market prices is the result of the arrival of new information, which temporarily disturbs the path of the price process. The rational bubble theory describes the sudden increasing divergence in a stock price from its intrinsic value. This hypothesis asserts that sudden acceleration in stock price movements results only from divulgation of unexpected information (Zhou and Sornette, 2009; Harras and Sornette, 2011), such as dividend announcements. This information stimulates the demand for securities in an excessive way, which exerts pressure on prices and fuels the bubble defined as the deviation of stock prices from market fundamentals. So when firms do not keep their promises, a bubble can burst and engender a collapse in the market value (Montier, 2007).

\* Corresponding author.

E-mail addresses: [houda.litimi@gmail.com](mailto:houda.litimi@gmail.com) (H. Litimi), [ahmedbensaïda@yahoo.com](mailto:ahmedbensaïda@yahoo.com) (A. BenSaïda), [bouraoui.omar@yahoo.fr](mailto:bouraoui.omar@yahoo.fr) (O. Bouraoui).

However, both discount rate and rational bubble theories have been heavily questioned. In fact, Shiller (2007) provides evidence countervailing the discount rate theory. He uses the variance-bounds test and shows that stock price volatility largely exceeds its intrinsic value and is greater than the dividend variance limit. Similarly, the restrictive assumption under the rational bubble hypothesis has also been refuted. In fact, a rational bubble assumes that excessive stock price fluctuation results only from an important news event. However, several of these high and dynamic market movements, such as the 1929 crisis, the 1987 crash or the subprime crisis, did not correlate with a specific new surprising event. In addition, the rational bubble condition, i.e., the bubble is fueled by rational investors and price divergence, is temporary. Though, several scholars (Orléan, 2004, among others) have examined the speculative bubbles and argued that prices deviate durably from their fundamental values; hence, a stock's high volatility is a persistent phenomenon.

Recently, the behavioral finance has advanced a convenient and realistic explanation to clustered market volatility, by assuming that the human reactions to events generating market fluctuations are more important than the events themselves (Baruch, 1960, p. 84). Thus, the behavioral perspective of market anomalies is built on social and psychological rules, where investors are victims to errors and cognitive biases. The behavioral explanation assumes that excessive volatility is derived from an investor's emotions and volatile beliefs, it is a persistent event, and exists as long as the investor expresses erroneous and psychological pitfalls. Furthermore, herding can be viewed as heuristic, since the investors use it to navigate their way through uncertainties or complexities of the market, e.g., following other investors assuming they are better informed in a market with low-quality information. By contrast, herding itself cannot be strictly classified as bias, whereas other biases, e.g., conformity – Hirshleifer (2001), home bias – Feng and Seasholes (2004), availability bias – Kuran and Sunstein (1999), can contribute to herding tendencies.

Herding behavior was first mentioned in Keynes (1936)'s theory, where he described it by resorting to the metaphors of *Beauty Contest* and *Delicious Apple*. It corresponds to an investor who denies his own information and beliefs to fall prey into a collective behavior, even if the actions of this group are not supported by relevant information. In this case, investors may just be imitating their informed peers, either because they themselves have no information, or because they think the investors they follow have superior information than they do. Such comportment is called *meme*, which is a mental representation, such as erroneous thoughts and beliefs that can be conveyed from one investor to another generating an increasing bubble, leading to market destabilization and generating excessive stock volatility. Thus, the detection of herding behavior itself constitutes evidence against the rational theory (Lao and Singh, 2011), and can lead to increased volatility in concentrated financial markets (Venezia et al., 2011). Though, its effect in large markets is still unresolved.

Few studies empirically provide a direct link between herding movement and dynamic conditional volatility in the US market. While some attempts using the idiosyncratic unconditional volatility are conducted in other markets, such as Blasco et al. (2012) in the Spanish stock market, Balcilar et al. (2014) in the Gulf Arab stock markets, and Huang et al. (2015) in the Taiwan equity market. Christie and Huang (1995) studied herding in the US market at a sectoral level and concluded its absence. However, Nofsinger and Sias (1999) provided evidence supporting herding among institutional investors in the US market. Recently, Chiang and Zheng (2010) did not detect herding in the US market, Chen (2013) found the presence of herding in developed markets in response to bad news instead of good news, and Zhou and Anderson (2013) detected herding in the American REIT sector when the market is moderately turbulent. On the other hand, BenSaida et al. (2015) found inconclusive results in the American market. These contradicting results have motivated us to examine more deeply the various sectors of the market rather than the general overall US stock market.<sup>1</sup> As far as we know, the study of this issue at a sectoral level has received negligible attention in the US stock market (Christie and Huang, 1995); although some attempts are conducted on the Taiwanese market (Demirer et al., 2010), and the Chinese A and B markets (Yao et al., 2014).

Our objective is twofold; first, we provide a robust examination of herding in every sector of the US market; and second we test whether this psychological phenomenon leads to excessive market volatility. This is of particular interest for risk management purposes, e.g., investors trading derivatives would be able to use spot market herding as a useful input for their trading decisions. Our sample includes four major periods: the black Monday of 1987, the dot-com bubble covering 1997–2000, the stock market downturn of 2002, and the latest global financial crisis, which erupted in 2008.

Herding is detected via the cross sectional standard deviation (CSSD) measure of Christie and Huang (1995), and the cross sectional absolute deviation (CSAD) variable of Chang et al. (2000). Moreover, we provide a direct link between CSAD and market conditional volatility, which may add to the existing literature. The remainder of this paper is organized as follows: Section 2 discusses the literature on excessive volatility and herd behavior; Section 3 describes the methodology and data; Section 4 presents a detailed report of the results; finally, Section 5 elaborates some concluding remarks.

## 2. Herding and the dynamic market evolution

The financial literature has witnessed important dynamics in stock prices. For example, from 1920 to 1929 the values of the US stock prices rose over fivefold (Orléan, 2004; Akerlof and Shiller, 2009); and researchers attest that stock prices continue to be abnormal and largely irregular in recent years (Blasco et al., 2012; Chen, 2013). Lux (1995) asserts that neither stationarity, rational bubbles, nor rational agent models are realistic or convincing scenarios for the dynamics of financial

<sup>1</sup> There is no universal model to test the presence of herding. So it is really difficult to assert that the mixed results are due to the observed reality or just to the variety of empirical designs across studies.

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