Systematic Review of the Market Wide Herding Behavior in Asian Region

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Abstract - *Traditional Finance theory presumed that equity market participants take decisions based on rationality. However, recent market incidents witnessed investor's decision-making process is fueled with irrational behaviors like herding. Herd behavior is a dominated behavioral bias which depict investors take decisions based on imitating other investors' behavior. Numerous studies can be identified in Herding based literacy in developed, emerging and frontier markets around the world. Thus, this study attempts to provide a review of theory and empirical evidence on market wide herding behavior in Asian region. As per the findings of the study, it can be observed that in India majority of studies have confirmed the non-existence of herding behavior. Half of the studies conducted in Pakistan confirm the existence of herding behavior while remainder confirm non-existence of herding behavior. Similar results were observed in Sri Lanka as well. However, majority of studies in Taiwan and Indonesia and all the studies of Vietnam have provided results for the existence of herding behavior. Thereby this study identifies several open issues for future research. Future studies that deal with time-series price data could employ empirical methodologies that allow for time-variation in parameter values. It is also important to know whether it is the same investors that herd over time, and why: are the reasons behind herding the same over time? Further qualitative research needs to be conducted to identify the reasons behind the investor herding behavior.*

Keywords – Behavioral finance, Herding behavior, Efficient Market Hypothesis, Capital Asset Pricing Model

INTRODUCTION

Decision making has become an integral part of the individual lives. Under the traditional economic and finance theories, market participants are expected to act rationally and consider all available information in the decision-making process.

However, many researchers revealed the irrational behavior of investors and concluded that repeated patterns of irrationality, inconsistency, and incompetence exist when making decisions under uncertainty. This leads to the emergence new theoretical area of "Behavioral Finance". During the period of 1960 and 1970s, behavioral finance scholars argued against traditional finance theories. Accordingly, over time, number of experiments identified several biases which affect to the individual

decision making; Heuristic dealing with information, varying availability of information, Anchoring, Representativeness, Overconfidence and control illusion, Disposition effect, Home bias and Following the herd.

Herd behavior is one of the leading behavioral biases which explain that investors are imitating other investment behavior rather than based on own process of information. According to Prosad, Kapoor, & Sengupta (2012), investors mimic the actions of crowd where decisions are made based on the judgements and actions of others. Ultimately, it leads to market inefficiencies and mispricing of securities.

PROBLEM STATEMENT

Herd behavior has become the most prominent phenomena in recently due to continuous deterioration in global equity market due to financial crisis. Identifying the gap existing in the field, many theoretical models have been developed and empirical studies undertaken in order to investigate the formation and causes of this phenomenon in financial markets. However, a few studies have been carried out by synthesizing the results generated by individual studies. Thus, this research study reviews and synthesizes the existing body of completed and recorded work produced by researchers, scholars, and practitioners on the existence of herding behavior in emerging and frontier markets. Thereby, the research problem in this study in "Does herding behavior exist in emerging and frontier markets in Asian region?"

OBJECTIVES OF THE STUDY

First objective is to review the existence of herding in emerging markets in Asian region. Second objective is to review the existence of herding in frontier markets in Asian region. Third objective is to test the validity of rational asset pricing model and efficient market hypothesis in Asian region.

METHODOLOGY

Researcher uses the SLR methodology suggested by (Aquilani, Silvestri, Ruggieri, & Gatti, 2017) and many researchers identified that SLR is the most appropriate methodology while attempting to review the existing literature.

SAMPLE SELECTION

To develop the sample, a detailed, considerable number of articles were reviewed on many databases such as Science Direct, Emerald and other open-source data bases. However, inability to access to other databases such as Web of Science, EBSCO and Scopus limited the study to a certain extent.

CONTENT ANALYSIS
MODELS USED TO ANALYZE THE HEARING BEHAVIOR IN ASIAN REGION

Existing literature has been documented four models regarding herd behavior (Table 1).

There are several empirical research related to measures which have been developed to investigate herd behavior in financial market (Table 2).

Table 1. Models used to analyze the hearing behavior in Asian region

Model	
Information-Based Herding and Cascades (Bikhchandani, Hirshleifer & Welch, 1992)	Optimal for individual to observe the actions of others, those ahead of him rather own private information
Information Acquisition Herding (Hirshleifer, Subrahmanyam & Titman, 1994)	Investors decide to follow the same source of information or same set of stocks.
Principal-Agent Based Model of Herding (Scharfstein et al., 1990)	When principals are uncertain about the ability of agents in picking right stocks, agents mimic the investment decisions of other agents instead of using their private information.
Preference of stock (Gompers & Metrick, 2001)	Institutional investors share preferences towards stocks with certain attributes such as liquidity, riskiness and size

Table 2. Methods to Measure Herding Behavior

Method	

Lakonishok, Shleifer and Vishny (1992)	Detect herd by exploring whether number of money managers are equal in buying and selling stock or not.
Christie and Huang (1995) (henceforth referred as CH)	Investigates the magnitude of cross-sectional dispersion of individual stock returns during large price changes.
Chang, Cheng and Khorana (2000) (henceforth referred as CCK)	Detect herd using the relationship between dispersion of market return and market return
Hwang and Salmon (2004, 2011)	A model based on the change of stock betas from their equilibrium to measure the herd behavior level.

EVALUATION OF HERDING BEHAVIOR IN EMERGING MARKETS

INDIA

In 2011, Lao & Singh tested the existence of herding behavior in both Chinese and Indian stock markets since both markets have been criticized as inefficient and riskier. Thus, they tested the existence of herding behavior in these markets using daily data of top 300 firms in the Shanghai A-Share index (SHA), and the top 300 firms from the Bombay Stock Exchange index (BSE) over the period 1999 to 2009. Results of the study proved the existence of herding in both Chinese and Indian stock markets. However, higher herding effect has been observed in the Chinese market due to the increasing number of inexperienced individual investors and relatively lower incidence of herding in India due to the influence of the large institutional investors.

In 2012, Prosad, Kapoor, & Sengupta investigated the effect of herding behavior in Indian equity market with three sub objectives of investigating the presence of herding on market, investigating whether herding pattern is nonlinear and investigating the presence of herding in bull and bear phases of the market individually. Research study was carried out using the stocks in NIFTY 50 (National Index Fifty) index of National Stock Exchange of India (NSE). Data sample of the study consists of daily returns of each constituent stock and of index from 2006 to 2011. When testing the presence of Herding on market, methodologies which was suggested by CH (1995) and CCK (2000) were used. Based on the findings, CSSD has increased with increase in market return, thus, has refuted the hypothesis of herding

behavior. Non-linearity between dispersion and market return was checked using curve estimate measure given by cross sectional absolute deviation (CSAD). Findings of the study showed that return dispersion are decreasing (or increasing) at an increasing rate and highlighted the fact that herding does not exist in Indian stock market but indicates the presence of non-linearity in relationship. For the third objective, individual tests were conducted for bull and bear markets separately and results indicated that herding prevails in the bull market.

In 2014, Poshakwale & Mandal, investigated whether investors in India demonstrate herd behavior by examining data from the National Stock Exchange (NSE) of India. Daily closing prices of S&P CNX Nifty index was used as the sample of the study over 1997 to 2012. Based on the results, researchers concluded that increasing the foreign equity portfolio flows and ever-increasing presence of FIIs have led the domestic investors follow the investment behavior of FIIs, thus they confirmed the presence of the herding behavior in Indian stock market.

Kumar, Bharti, & Bansal in 2016 attempted to examine the presence of herding in Indian stock market amongst the investors, using the daily closing price of NSE's benchmark index Nifty and 36 companies forming part of it for a period commencing from 2008 to 2015. Models of CSSD, and CSAD were employed mainly to examine the existence of herding behavior. Regression results for the complete market period have shown the absence of herding behavior in the Indian equity market

throughout the sample period and regression results for the bull and bear markets have also depicted the absence of herding behavior.

Chauhan, Ahmad, Aggarwal, & Chandrad, conducted a research study in 2019 by employing the large and small cap stocks of Indian financial markets for a five-year period from 2011-2015. For measuring securities dispersion from market returns, researcher has employed CSAD and has regressed against absolute value of index return and its square to establish the nature of relationship between the two variables. Findings revealed herding behavior in large cap stocks but, not with small cap stocks due to information asymmetry and lower trading volume. Further, researcher has argued that stock analysts tend to focus more on large-cap stocks to mitigate the risk associated with their portfolios, and hence more than 60 percent of analysts tend to herd toward the prevailing consensus.

Kanojia, Singh, & Goswami (2020) conducted research to investigate how the herding behavior impacts the equity market of India at large. Further, they attempted to investigate herding behavior's impact on the equity market of India in extreme market conditions and during increasing and decreasing market conditions. The study has employed daily, weekly and monthly data of 37 stocks of the Nifty 50 over 2009 to 2018. The results of the study evidenced that there is no impact of herding behavior on stock returns during normal market conditions. Further, the study revealed there is no herding behavior in the Indian equity market during extreme market conditions as well as increasing and decreasing market conditions.

PAKISTAN

In 2015, Javaira & Hassan examined the herd behavior in Pakistani stock market by employing methodologies used by CH (1995), CCK (2000) and Gleason et al. (2004). This study used daily and monthly closing prices and trading volumes of KSE-100 index constituents which comprise of 100 companies that covers 86 percent of market capitalization at the Karachi Stock Exchange, over 2002 to 2007. Results showed absence of herding behavior supporting the assumption of the rational asset pricing. In addition, during bull and bear conditions, market returns were insignificantly related to measure of dispersion for both daily and monthly returns whereas non-linear term was significantly and positively related to measure of dispersion. It indicated the absence of herding in Pakistani market in bullish or bearish trends. Finally, the study examined the existence of herding behavior in crises period of March 2005 and its results were in favor of herding specifically in stock market crises due to asymmetry of information among investors, presence of speculator and questionable bald financing-local leverage financing mechanism.

Shah, Shah, and Khan in 2017 attempted to examine the herding behavior in the Pakistan stock exchange (PSX) using the model of CH (1995) on the daily closing price data of 609 firms listed on the PSX from 2004 to 2013. The research study was carried out with the sub-objectives of finding any herding behaviors of firms with market index, herding of firms with industry portfolios, herding of industry portfolios towards the market. Accordingly, the revealed results suggest that the dispersion between stock returns of individual firms and the market index is high and that indicates stock returns of individual firms do not herd towards market index. Results of the analysis carried to test herding of firms with industry portfolios indicated that individual firm herd toward industry portfolios during 5% upward swings in market returns but no herding is observed during downward movements in portfolio returns. Conversely, when firms are sorted into small and large groups based on median market capitalization, results signify that large firms indicate a herding behavior in extreme market movements. Finally, the results of the study suggest that investors are more likely to follow the market during the crisis period concluding that investors not always act rationally when making their investment decisions and herding bias could be seen in different situations.

In 2019, Javed, Zafar, and Hafeez conducted research with two objectives of finding the existence of herding behavior in Pakistani Stock Market under extreme market conditions as well as to find the evidence of herding behavior in Pakistani Stock Market when CSAD is the measure. Monthly returns of KSE 100 are selected as the sample for the study. CSSD and CSAD were employed for the study. Accordingly, regression results for the CSSD analysis suggest rebuffing the hypothesis that there is an existence of herding behavior in the Pakistani Stock Exchange under extreme market conditions. The second hypothesis of the research study was rejected based on the results of regression analysis for CSAD concluding that there is no evidence for the herding behavior in the Pakistani Stock Market.

Contradictory to the above findings, the research study conducted by Qasim, Hussain, Mehboob and Arshad in 2018 to observe the impact of herding behavior and overconfidence bias on investors' decision-making in Pakistan revealed that investors of Pakistani Stock Exchange are significantly influenced by both herding and overconfidence biases. The study has collected data through distributing questionnaire among 150 investors. The data were analyzed using Ordinary Least Square (OLS) method and regression results indicated a strong impact on investment decisions through herding and overconfidence biases supporting the hypothesis.

Similarly, the research conducted by Kashif et al. (2021) provided significant evidence of herding behavior in Pakistan Stock Exchange. Kashif et al. (2021) conducted research by employing CSAD model and State-space model, to identify the herding behavior. Daily returns of KSE all share index and 890 listed firms have been utilized over 2000 to 2016. The CSAD model depicted no evidence of herding behavior over the entire sample period. However, the model evidenced significant non-linear herding during upper and lower extreme market movements. The state-space model evidenced significant herding behavior over the

entire sample period as well as across firms of different sizes, the book to market value, operating profitability, and investment. Furthermore, the study suggested that Pakistan Stock Exchange witnesses intentional herding as compared to spurious herding.

TAIWAN

Shyu and Sun in 2010 attempted to investigate whether institutional investors herd in Taiwan Market. The study has used a sample of daily trading data over 1999 to 2004, covering 1,613 trading days. The considered period comprised of both a bull and a bear market and underwent many significant transformations. The study has utilized the methodology proposed by Sias (2004) to determine the herding behavior of institutional investors. The results of the study revealed the presence of institutional herding in Taiwan's stock market. Based on the significance of the regression coefficients, the study found that momentum trading is not the main reason for the herding behavior of institutional investors.

Chen et al. (2012) undertook research to examine the herding behavior of foreign institutional investors. The data of the study consists of daily foreign institutional trading imbalance, return and trading volume of stocks and industries listed on the Taiwan Securities Exchange Corporation and Gretai Securities Market over 2002 to 2009. The model proposed by Sias (2004) has been followed to examine the institutional investors' herding behavior. Firstly, based on the results of the study, herding behavior of foreign institutional investors among industries was observed. Secondly, they observed momentum traders and contrarian traders in the market. Thirdly, the authors found that herding behavior has a positive effect on future industrial returns.

In 2017, Demirer, Kutan, and Chen conducted a research study to examine whether investors herd in emerging Stock Markets based on the evidence from the Taiwanese Stock Market (TSEC). Researchers have employed CSSD, CSAD and the model based on a state-

space model specification proposed by Hwang and Salmon (2004) using a sample data set of daily data from 1995 to 2006. The empirical results revealed that there is no evidence of investor herding behaviors, except for the Electronics sector based on the results of the linear model CSSD. In contradictory to the above finding the results from the non-linear model CSAD denote significant non-linear effects and provide assistance for herding in all sectors analyzed. Empirical results of factor sensitive test using the state space-based model further support the results of the non-linear model, furnishing vital substantiation for the irrational investor behaviors with herding bias in TSEC across all sectors.

Study conducted by Munkh-Ulzii et al. (2018) attempted to examine the existence of herding behavior in China and Taiwan during both general and specific markets conditions, inclusive of bull and bear markets, and high-low trading volumes. To examine the herding behavior, the study followed CSAD model, using daily stock return data of all firms listed on the Shanghai Stock Exchange (SSE), the Shenzhen Stock Exchange (SZSE), and the Taiwan Stock Exchange, over 1999 to 2015. The empirical evidence strongly supported the first hypothesis confirming herding behavior in Chinese and Taiwanese stock markets. The second hypothesis of the study – whether herding exists during bull and bear markets – was confirmed through empirical evidence. Finally, the third hypothesis on herding behavior during high and low trading volume states was confirmed with strong confirmation statistical evidence.

INDONESIA

With the purpose of studying the possibility of herd behavior during the market crash in Indonesian stock market in 2008, Purba & Faradynawati in 2012 conducted a research study by reworking the methodologies suggested by CH (1995) and CCK (1999) using daily and weekly data for 282 listed Indonesian firms in the Indonesian Stock Exchange (IDX) over 2007

to 2010. Findings of the study documented the nonexistence of herding behavior in Indonesian stock market under the CSSD method and existence of herd behavior particularly on big capitalization and liquid stocks under CSAD method.

Putra, Rizkianto, and Chalid (2017) conducted a research study to analyze herding behavior in Indonesia and Singapore Stock Market. The sample period consists of daily market return data from 1996 to 2015 from the Jakarta Composite Index and FTSE ST All-Share Index. Methodologies proposed by CH (1995) and CCK (2000) were employed for this study. Regression results suggest that investors in both countries disregard the analysis and tend to follow the decisions of other investors in the market over the entire sample period of 1996-2015 concluding the existence of herding bias.

With the aim of examining herding behavior in the Indonesian capital market, Rahayu et al. (2021) carried out an experiment in 2021. Book Value Per Share (BVPS) and social influence were considered as the two independent factors in the experiment. Treatment of a sample of 100 individual investors on the Indonesia Stock Exchange was used to obtain data. The independent variable was tested on the dependent variable using the Univariate Two-Way Analysis of Variance (ANOVA) statistical technique. The findings of the study revealed that the social influence of expert investors has a greater impact on the behavior of herding investors in making investment decisions than BVPS data.

EVALUATION OF HERDING BEHAVIOR IN FRONTIER MARKETS
SRI LANKA

Menike, Dunusinghe and Ranasinghe (2015) 164 individual investors' survey to identify several behavioral factors effect on investment decisions in Colombo Stock Exchange (CSE) and their results supported the strong existence of Herd behavior in CSE. Further, their findings have supported the findings of Waweru et al. (2008) who concluded

that buying and selling decisions of an investor is significantly impacted by others' decisions.

Kengatharan and Kengatharan (2015) have identified four variables impacting herding in CSE namely choice of stock, volume of stock, buying and selling of stocks and speed of herding. They concluded that, herding factor has moderate influence in the investment decisions. However, investment performance perspective is not affected by Herding factor, but they concluded that selecting of stocks based on Herding and investment performances have a significant relationship.

Sewwandi W.G.T (2016) examined the market wide herding in CSE by following a CSAD. She had examined the daily returns of the companies listed in CSE during the period of 2001 to 2015. She identified no herding behavior taking place in CSE during the period of study and she further identified no herding behavior took place in both up and down-market movements.

The research conducted by Abeysekera et al. (2020) attempted to study the herding behavior among investors in CSE and the herding behavior during bull and bear market phases. Daily share returns of 20 companies in S&P SL 20 index spanning over the period 2007 to 2018 have been considered to run the models of CSAD and CSSD to identify herding behavior across the market. The empirical results concluded the absence of herding behavior in the CSE; market wide as well as during bull and bear phases.

VIETNAM

Le and Truong (2014) examined the herd behavior in Vietnam Stock Exchange using the security returns in 2006 to 2012 by using CSSD and CSAD and new method called probability approach. The study adopts daily data from a main center of Vietnamese Stock Market. Their study had shown presence of herding behavior in Vietnam Stock Exchange.

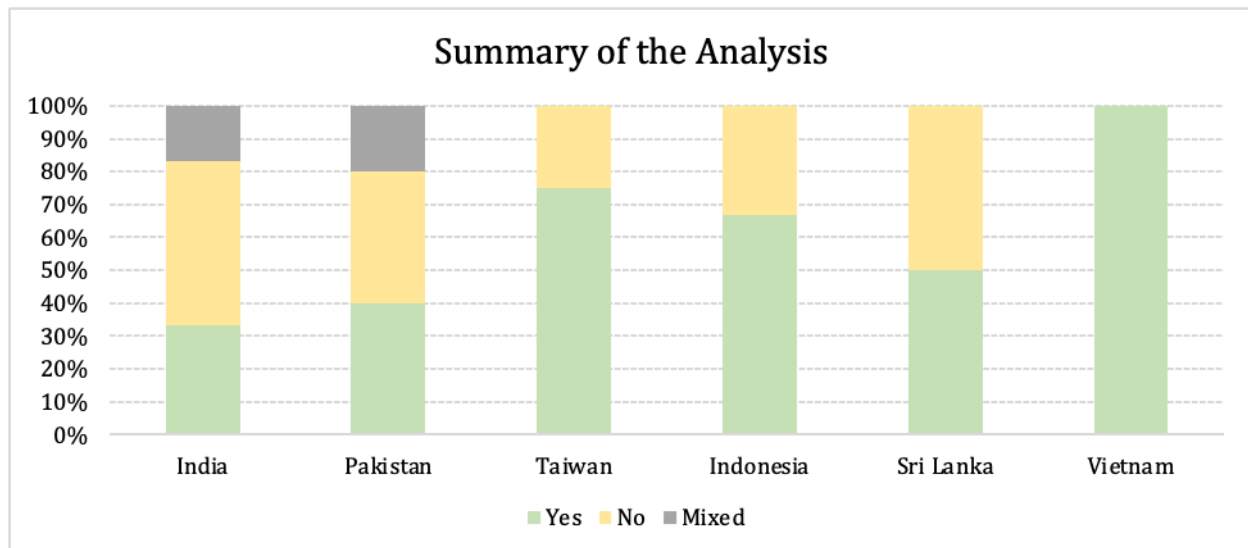Due to the inconclusive conclusion in existing literature and limited studies regarding herding behavior in Vietnam stock market, Vo & Phan (2017), conducted a research study to find out the presence of herd behavior and the impact of global financial crisis on this phenomenon in Vietnam stock market. The results indicate the evidence of herding over the whole period studied. Moreover, the results are robust when split the data into three sub-periods including pre-crisis, during crisis and post-crisis.

Bui et al. (2018) conducted a broad study with three main aims, first; to identify the existence of herding behavior in Vietnam, second; herding behavior based on different market scenarios and third; effect of outside markets on herding behavior in Vietnam. The CSAD was followed using a sample of 772 companies listed on Hanoi Stock Exchange (HNX) and Ho Chi Minh Stock Exchange (HOSE) over the period of 2007 to 2014. Based on the empirical results, the authors concluded the existence of herding behavior in the stock markets of Vietnam and both up and down-market scenarios induce investors to depict herding behavior.

DISCUSSION
OPEN ISSUES AND EMPIRICAL LIMITATIONS

This paper reviews a number of papers that study herding behavior in security markets either at a theoretical or an empirical level. The main conclusions that emerge from the discussion are as follows. Regarding the first and the second objectives of the study of testing market wide herding in frontier and emerging markets in the Asian region, the empirical evidence is inconclusive. As per the following chart, it can be observed that in India majority of studies have confirmed the non-existence of herding behavior. Half of the studies conducted in Pakistan confirm the existence of herding behavior while remainder confirm non-existence of herding behavior. Similar results were observed in Sri Lanka as well. However, majority of studies in Taiwan and Indonesia and all the studies of Vietnam have provided results for the existence of herding behavior.

Secondly, the limitations to the existing measures of herding in financial markets perhaps explains to some extent the inconclusive empirical evidence. Thirdly, no proper reasons have been identified with respect to the existence of herding behavior in markets. Analysts usually carefully consider the existence of herding, as it can result the price deviation of the securities from fundamental value. Academic researchers pay their attention to herding; as its impacts on stock price changes can influence the attributes of risk and return models and asset pricing theories.

Regarding the third objective of the study; the validity of rational asset pricing model and efficient market hypothesis in Asian region is inconclusive. Majority of the studies conducted in the Asian region have depicted contradictory results, hence the validity of the rational asset pricing model cannot be concluded.

SUGGESTIONS FOR FUTURE RESEARCHERS

The discussion above indicates several open issues for future research. Future studies that deal with time-series price data could employ empirical methodologies that allow for time-variation in parameter values. It is also important to know whether it is the same investors that herd over time, and why: are the reasons behind herding the same over time? Further qualitative research needs to be conducted to identify the reasons behind the investor herding behavior.

CONCLUSION

Under the traditional economic and finance theories, market participants are expected to act rationally and consider all available information in the decision-making process. However, researchers revealed the irrational behavior of investors when making decisions under uncertainty. This leads to the emergence new theoretical area of "Behavioral Finance".

Herd behavior is one of the leading behavioral biases which explain that investors are imitating other investment behavior. While identifying the gap exist in the field, many theoretical models have been developed and empirical studies undertaken to investigate the formation and causes of herding behavior in financial markets. However, a few studies have been carried out by synthesizing the results generated by individual studies. Thus, researchers conducted the study to review and synthesize the existing body of completed and

recorded work produced by researchers, scholars, and practitioners on the existence of herding behavior in emerging and frontier markets.

As per the findings of the study, it can be observed that in India majority of studies have confirmed the non-existence of herding behavior. Half of the studies conducted in Pakistan confirm the existence of herding behavior while remainder confirm non-existence of herding behavior. Similar results were observed in Sri Lanka as well. However, majority of studies in Taiwan and Indonesia and all the studies of Vietnam have provided results for the existence of herding behavior. Thus, the empirical evidence is inconclusive. Secondly, there are limitations to the existing measures of

herding in financial markets; perhaps this explains to some extent the inconclusive empirical evidence. Thirdly, no proper reasons have been identified with respect to the existence of herding behavior in markets.

The discussion above indicates a number of open issues for future research. Future studies that deal with time-series price data could employ empirical methodologies that allow for time-variation in parameter values. It is also important to know whether it is the same investors that herd over time, and why: are the reasons behind herding the same over time? Further qualitative research needs to be conducted to identify the reasons behind the investor herding behavior.

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