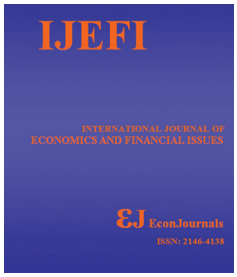

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Detecting the Herding Behaviour in the South African Stock Market and its Implications

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ABSTRACT

Herd mentality is associated with financial market bubbles and crises and is not a new concept. Despite the dotcom bubble in the late 90's and the recent real estate bubble, investors still have the tendency to see irrational decision as rational. Thus the aim of this study was to investigate the presence of herding in the Johannesburg stock exchange during the Covid-19 pandemic. Studies conducted in other markets have detected the presence of herding which sends strong signal of issues that may arise in financial markets. Using a sample period from 02 January 2020 to 31 December 2021 and a cross sectional absolute deviation as an analysis tool, the findings reveals a significant presence of herding in the Johannesburg stock exchange. The main implications to this finding is that momentum investing strategies is more suitable for the Johannesburg Stock exchange and exploring past price movements may provide valuable insights on expected future price movements.

Keywords: Herding, Financial Markets, CSAD, Covid-19
JEL Classifications: G1, G2, G4

1. INTRODUCTION

It is embedded in humans to always follow crowds or to be in groups ever since creation which has resulted in adhering to collective behaviour. The concept of collective behaviour cuts across multiple discipline and is frequently used in marketing where adverts are positioned in similar manner to convey similar messages and create similar impression (Dwivedi et al., 2021). In financial markets, it has been well documented that investors adopt herd mentality (Hachicha, 2010; Filip et al., 2015; Braga, 2016; Ababio and Mwamba, 2016; Choi and Yoon, 2020; Ah Mand et al., 2021; Bharti and Kumar, 2021; Espinosa-Méndez and Arias, 2021). More specifically, investors tend to follow similar investment strategies simply because others are doing the same (Benartzi and Thaler, 2001). In this case, investors may invest in a particular market or security or choose to rebalance their portfolios just because others are doing likewise. This herd mentality practice has greatly affected stock markets due to irrational investments and choices (Shantha, 2019). Many financial markets are still ranked behind the United States (US) financial markets despite overwhelming evidence of prospective good returns (Cetorelli et al., 2007). At times, there is no mathematical evidence to support certain investment decisions which can be attributed to irrationality in the market partly because of herding (Brahmana et al., 2012). Due to this herding mentality, there are several episodes of bullish and bearish phases in stock markets resulting in significant rise and drop in prices because investors are just doing what other investors are doing (Mishra and Mishra, 2021). Herd instincts, such as greed, fear and envy creates a lack of individual thoughtfulness (Kanojia et al., 2020). The fear or regret of missing out is usually the driving force behind herd mentality causing large and unsubstantiated buy/sell offs positions with seemingly little or no evidence of fundamentals (Shiva et al., 2020). This issue of fear and regret summing up the herding behaviour was well evident in the dotcom bubble in the late 1990's and early 2000 which are classic examples of herding ramifications in financial markets (Ju, 2020). The late 90s and early 2000 was characterise by rapid technological growth which was due to the

release of the mosaic web browser in 1993. This release of the web browser gave many people access to the internet and a wave of mass adoption of internet companies. Netscape which was one of these tech companies freely distributed their web browser and became the industry standard (Hazlett, 1999). In 1995, Netscape initial public offering took the world by storm when its opening price of $28 rose to $75 on the 1st day of trading (Long, 2011). More and more investors rushed to purchased other tech stocks without any evidence of fundamentals which was the main cause of the dot com bubble.

A volatile market which is characterise by a significant higher or lower than the expected return compared to the fundamental value usually raises concerns of the efficiency of the market (Bouattour and Martinez, 2019). Investigating the presence of herd behaviour in stock markets has several benefits, including a good understanding of risk and return trade-offs, pricing models, as well as profitable trading strategies. Therefore, the aim of this study was to empirically investigate herding in the Johannesburg stock exchange in other to provide a comparative analysis with other financial markets and provide important recommendations for investors, investment practitioners and academics. This study contributes to the literature of herding behaviour in the South African context during the pandemic and provides recommendation for momentum investors.

1.1. Research Question

- Is there any evidence of herding behaviour in the Johannesburg stock exchange (JSE) during the Covid-19 pandemic?
- Did investors ignore important fundamentals during the Covid-19 pandemic and followed the overall market signal in the JSE index?

1.2. Hypothesis

- H_0: There is no statistical evidence of herding in the JSE index during the covid-19 pandemic
- H_1: There is sufficient statistical evidence of herding in the JSE index during the covid-19 pandemic
- H_2: investors did not ignore important fundamentals and followed the overall market signal in the JSE index during the covid-19 pandemic
- H_3: Investors ignored important fundamentals and followed the overall market signal in the JSE index during the covid-19 pandemic.

2. LITERATURE REVIEW

There are generally two forms of herding behaviour which can be classified into intentional herding and spurious herding (Bikhchandani and Sharma, 2000). Intentional herding is when investors tends to follow the actions of others leading to an inefficient outcome and market inefficiencies (Bikhchandani and Sharma, 2000). Spurious herding refers to having similar information sets and decision problems leading to similar outcomes (Merli and Roger, 2013). This herding behaviours are also rational and irrational as suggested by Devenow and Welch (1996). Rational herding focuses on the external environment assuming that decisions become misleading because of incentive issues or information difficulties. According to Bikhchandani and Sharma (2000), there are three reasons for rational herding which are imperfect information, concern for reputation and compensation structures. Imperfect information also known as information cascades occurs when investors have private information about a security which is not readily available to everyone (Dewan and Dharni, 2019). In this case, market participants trade on imperfect knowledge. On the other hand, reputation for concern contends that it is rational for an investor to mimic the investment decisions of other investment managers because of their expertise and most often, perceived as smart (Scharfstein and Stein, 1990). Also, these investment practitioners usually receive signals that can be used for trading leading. Therefore, mimicking these managers may be a profitable leading to herding in the market. Non rational herding focuses on psychology and assumes that investors behave alike ignoring all rational analysis and following others blindly (Devenow and Welch, 1996). A decline in the value of a stock will trigger multiple sell order from other investors without any rational decision because these investors are reacting to panic. The literature below highlights several evidence of herding behaviour pre the covid-19 pandemic.

From the literature presented in Table 1, there seemed to be evidence of herding behaviour during the pandemic in international stock markets. However, there is still very little empirical studies in the African markets, hence the purpose of this study. The above studies suggest that we may be heading for another bubble if the same evidence is found in major African markets. The methodology and results are presented in the section below.

3. RESEARCH METHODOLOGY

This study used CSAD which was proposed by Chang et al., (2000) and has been widely used in prior literature to test for herding behaviour in financial markets (Hachicha, (2010); My and Truong, (2011); Boutabba, (2014); Filip et al., (2015); Braga, (2016); Ababio and Mwamba (2016); Choi and Yoon (2020); Ah Mand et al., (2021); Bharti and Kumar (2021); Graisse (2020)). The CSAD is given by;

$$E(R_i) = Y_o + B_i E_t (R_m - Y_o)$$

The expected cross-sectional absolute deviation (ECSAD) of the market return is given by

$$\text{ECSADt} = \frac{1}{N}\sum AVDi,t = \frac{1}{N}\sum |B_i - B_m| E_t (R_m - \diamond_o)$$

$$\frac{\delta ECSADt}{\delta E_t (R_m)} = \frac{1}{N}\sum_{i=1}^{N} |B_i - B_m > 0|$$

$$\frac{\delta^2 ECSADt}{\delta E_t (R_m)^2} = 0$$

Therefore, the presence of herding in the financial market if given by

$$CSAD_t = \alpha + Y_1 R_m + Y_2 |R_m| + Y_3 (R_m)^2 + \varepsilon_t$$

Table 1. Summary of prior literature

Study (Author and year of study)	Model	Period	Country	Findings
Hachicha (2010)	Cross sectional standard deviation (CSSD)	January 2000-December 2006	Canada	Evidence of herding behaviour during the period under consideration.
My and Truong (2011)	CSAD	3 March 2002-1 January 2006	Vietnam	No evidence of herding behaviour but investors display a slightly different behaviour during periods of uncertainty.
Boutabba (2014)	CSSD and CSAD	1999-2012	United States Argentina and France	No evidence of herding in United States Argentina and France stock market during the period under consideration.
Filip et al., (2015)	Cross sectional absolute deviation (CSAD)	January 2008-December 2010	Czech Republic, Poland, Hungary, Romania and Bulgaria	There was evidence of herding behaviour especially during stock market decline displaying a different behaviour during post crisis periods.
Braga (2016)	CSSD and CSAD	2000-2016	Spain and Portugal	Evidence of increasing herding after the sovereign debt crises.
Ababio and Mwamba (2016)	CSAD	January 2010 to September 2015	South Africa	Herding behaviour in the banking sector during bear phases while the financial and real estate sector displayed herding behaviour during bull phases
Choi and Yoon (2020)	CSAD	N/A	Korean Stock Market	Adverse herding behaviour is present in low trading volumes and volatility periods.
Ah Mand et al., (2021)	CSAD	1995–2016	Malaysia	Evidence of herding behaviour during the period under consideration.
Bharti and Kumar (2021)	CSAD	1 January 2020-15 June 2020	India	The presence of herding behaviour which is aggravated by market volatility
Graisse (2020)	CSAD	1 January 2006-31 December 2020	US and European markets	No evidence of herding behaviour
Espinosa-Méndez and Arias (2021)	CSAD	10 June 2008-19 June 2020	Australia	Covid-19 has increased the level of herding behaviour in the Australian stock market
Bouri et al., (2021)	CSAD	1 January 2019-10 August 2020	Morgan Stanley Capital International (MSCI) indexes in US	Strong evidence that Covid-19 induces herd behaviour in stock markets.
Mishra and Mishra (2021)	CASD and GARCH model	1 August 2019-28 July 2020	Banking and financial service sector in India	Significant evidence of herding behaviour in the banking and financial service sector.
Patel (2021)	CSAD	May 2002 to 31 December 2019	JSE All Share Index	No evidence of herding behaviour during the period under consideration but rather found evidence of anti-herding behaviours.

Ah Mand et al., (2021) From the above specification, the presence of herding behaviour is detected by the coefficient (Y_3). The CSAD measures the deviation of stock returns from the market return at any given day. The coefficient of CSAD indicates whether there is herding in the market and synchronisation of trading signals and disregard of individual stock fundamentals. Notable volatility is present when the values of CSAD decreases as the market moves up or down. This may also mean that investors ignore individual characteristics of stocks and follow the overall market signal for investments.

When herding is present, the Y_3 coefficient is negative and non-linear because investors are expected to follow a homogenous pattern during different episodes in the market. In this case, the deviation from the expected return increases at a decreasing pace which depicts behavioural anomalies. In instances where herding is absent, the coefficient is positive and linear. The Johannesburg stock exchange was the financial market under observation using a sample period from 02 January 2020 to 31 December 2021.

4. DATA RESULTS

This section presents the findings from the data collected. The table 2 highlights the findings.

The coefficients of the regression results are presented below

Table 2: Descriptive statistics

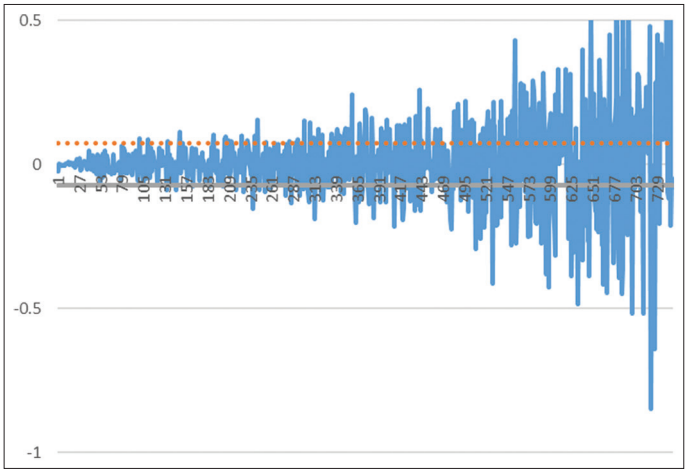
Distribution	Percent	Return
Right tail	95	3.03%
Left tail	5	–2.83%

Table 3: Regression output

Variables	Coefficients	t-stats	P-value
α	0.0076	7.769914	0.0000
$Y_1 R_m$	0.00226	0.07332	0.9415
$Y_2\|R_m\|$	0.277411	2.6336	0.0000
$Y_3 (R_m)^2$	−0.22498	−0.1142	0.0000
Adjusted R^2	0.4033		
n	500		

Table 3 presents the descriptive statistics of the JSE which reveals that the returns are skewed to the right at a 95% confidence. This results correlates with the findings in figure 1 which also shows clustering effect to the right breaching the 0.5 threshold in both directions. The findings in Table 3 confirms the presence of herding in the South African market during the Covid-19 pandemic. This is evident in the negative Y_3 coefficient in the regression equation meaning investors in the JSE index move in herds or clusters. This is also evident in the graphical representation were the blue spikes are well above the red lines. This finding may suggest that during the covid-19 pandemic, investors in the JSE index are afraid rely on herding for guidance which creates a distorted signal change

Figure 1: A graphical stylist fact is presented below



Source: Excel output

and contains no real valuable information. Considering the findings of prior research Bouri et al., (2021); Espinosa-Méndez and Arias (2021); Bharti and Kumar (2021), we might see another financial market crisis or market bubble in the nearest feature. The solution to this herding instincts prevailing in most financial markets (Bouri et al., (2021); Espinosa-Méndez and Arias (2021); Bharti and Kumar (2021)) is not to ignore all external information. Rather the idea is to become more aware of information that is being used to make decisions especially when investors are observing what other investors are doing. Herd is not synonymous with bad behaviour per say but over reliance on it prompts ignorance and distorts the information we use to make decisions.

5. CONCLUSION

The aim of study was to investigate the presence of herding behaviour in the South African stock market and its implications. Using the CSAD model, the findings of this study revealed the presence of herding during the covid-19 pandemic in the JSE which may be prevailing in other markets as well. In line with the findings, it may be suggested that investors are ignoring important fundamental signals and following other investors. Giving rise to possible momentum style investing, past price movements in the JSE may prove to be a valuable tool in predicting future price movements. It may be also possible that arbitrage opportunities may exist in the JSE and may be exploited with sufficient fundamental buy/sell evidence. Also, the JSE might see another market bubble in the nearest future if this herding mentality continues. Investors should also rely on sound financial analysis rather than herding instincts to avoid bubbles and financial market crisis.

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