EFFECT OF HERDING BEHAVIOUR ON STOCK PRICE MOVEMENTS AT NAIROBI SECURITIES EXCHANGE

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Effect of Herding Behaviour on Stock Price Movements at Nairobi Securities Exchange

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Abstract

Purpose: Empirical evidence shows that herding pattern is experienced at NSE which is linked to particular periods.

Methodology: We observe the kind of herding characterised by changes in the stock market parameters which includes number of deals, average price, total purchases among other market parameters are as a result of unique circumstances as opposed to the overall market.

Findings: Further, results of both CSSD and CSAD indicated that herding has an effect on prices of shares and stocks. Idiosyncratic herding phenomenon detected can either be reduced or eliminated from portfolios through different diversifications strategies which are meant to reduce the levels of exposure to risk by merging various investment like bonds, real estates, stocks among others which are all not likely to be moving towards the same direction. Further, by encouraging diversification, also herding behaviour would be decreased by the simple fact that assets cannot move in the same direction at the same time and rate.

Unique Contribution to Theory, Practice and Policy: It is also recommended that the government should try to privatize some of its enterprises to enhance public participation in an effort to stabilise stock prices. This should be accompanied by alliances with exchange securities. The policy makers need further to consider forecasting the financial instability and thus regulate herding patterns in advance.

Keywords: *Herding, Stock Prices, Stock Price Movements*

INTRODUCTION

Herding behaviour is a relevant phenomenon in stock markets. Human beings have a very long history of demonstrating herding behaviour which can be traced back to the early Iron Age, i.e. 1200 BC (Wallace, 2003). At the end of the Nineteenth Century, the early social psychologists borrowed this word to describe collective behaviour carried out by the crowds with irrational, impulsive and primitive emotions (Vaughan & Hogg, 2005). Herding does not automatically involve irrational behaviour because there are many circumstances in which investors amend their behaviour in a rational way as a response to perceived social pressure (Rook, 2006).

An important investment implication of herding 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 where there is no herding. Furthermore, in a market where investors herd under certain, identifiable states of certain key market variables, stock prices would stop reflecting values of businesses leading the way to speculative trades. Existence of herding may have implications for asset pricing models since it has a behavioural effect on stock price movements and correspondingly has an impact on the return and risk of the stock (Tan, Chiang, Mason and Nelling, 2008; Seetharaman and Raj, 2011).

Statement of the Problem

The stock market in Kenya is still developing; herding behaviour seems very likely to exist in Kenya stock market from the experience of IPO offering oversubscription and the stock index turbulence during the political regime changeovers and other related political activities. Levine and Zervos (1996) claim that fund managers, institutional investors and other individual investors, have a big task of recognizing the potential risks which may arise from these market anomalies and imperfections, in order to determine the right investment strategy. Nonetheless, while there is vast research Lindhe, (2012), Henker, Henker, and Mitsios (2006),and Daniel, Hirshleifer and Subrahmanyam (1997) concerning herding behaviour in developed stock markets, Jurkatis et al., (2012) suggests that there is still little done to both conceptual and theoretical investigations on herding behaviour in developing financial markets and in particular the African countries. Further, in their study, they argued that herd behaviour is often a significant threat to the stability and efficiency of financial markets. Due to all these, this study explores the nature and implication of herding behaviour in Nairobi Securities Market and making relevant recommendations based on the study findings.

Research Objectives

The main objective of the study was to explore herding behaviour at the Nairobi Securities Exchange. The study focussed on the following specific objectives

  i.   To explore the existence of herding behavior at the NSE.

  ii. To investigate whether herding has effect on stock price movement at the NSE.

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RESEARCH METHODOLOGY

The study adopted a mixed research design; it adopted a cross-sectional and correlational research design as the scope of the study involved a cross-section of companies listed in the Nairobi Securities Exchange. The study population consisted of 57 companies and secondary data was used for the period 2007– 2013 with 4788 observations. The choice of this period was informed by the availability of data. A dynamic panel estimation technique was thus adopted to establish the effect of herding behaviour on stock price movement at the NSE. This technique is based on both cross sectional and time series components in the data. Two kinds of return dispersion based models as testing methodologies for the existence of herding and its influence on performance of NSE were employed. This two testing methodologies employed are based on Cross Sectional Standard Deviations (CSSD) and Cross-Sectional Absolute Standard Deviations (CSAD) among individual firm returns within a particular group of securities.

RESULTS AND DISCUSSION

Establishing Existence of Herding at the NSE

Diverse graphical illustration was adopted in demonstrating the trend of all the variables of interest (turn over, number of deals, Purchases, Sales and Cross Sectional Absolute Deviation) over the entire time periods, we observe the kind of herding characterised by changes in the stock market parameters that are as a result of unique circumstances of that specific indicator as opposed to the overall market. From Figure 1, it is observed that herding exists at the NSE as evidenced by constant oscillations over the entire time period. This study also uses turn over as an indicator for herding prevalence. Figure 2 below, also shows dynamic fluctuations, in the value of shares trade on the stock exchange a characteristic of herding behaviour.
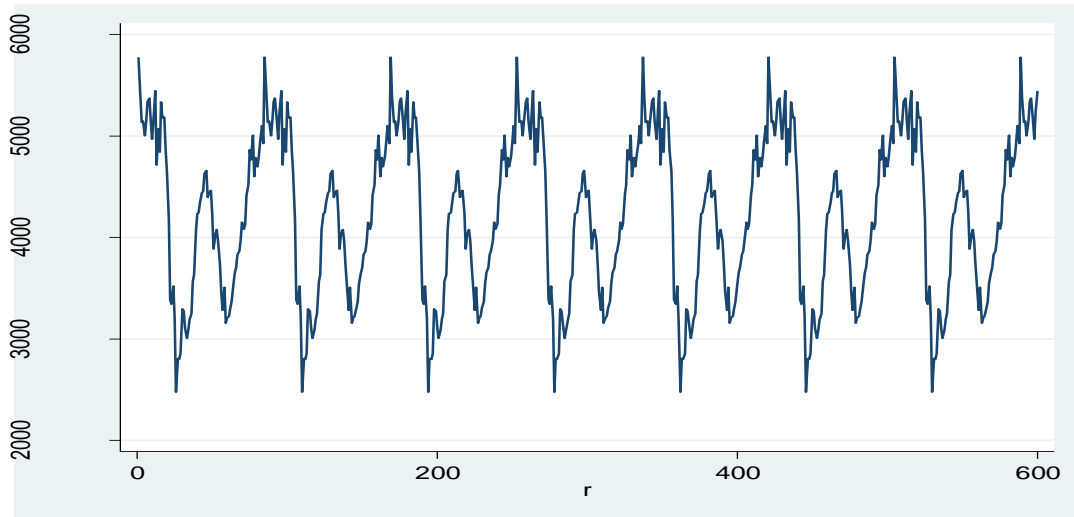
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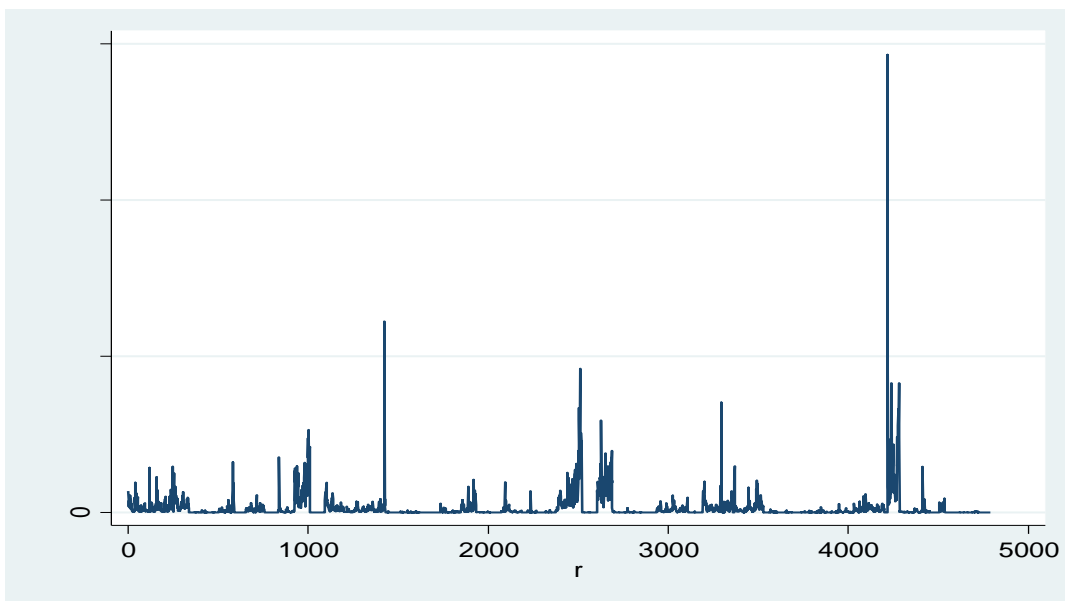**Figure 1: NSE share index against time period.**

Figure 2: NSE turnover against time periods

As shown on Figure 3 regarding NSE turnover, the number of deals exhibits systematic changes over time. This is a clear manifestations of herding patterns at the NSE.
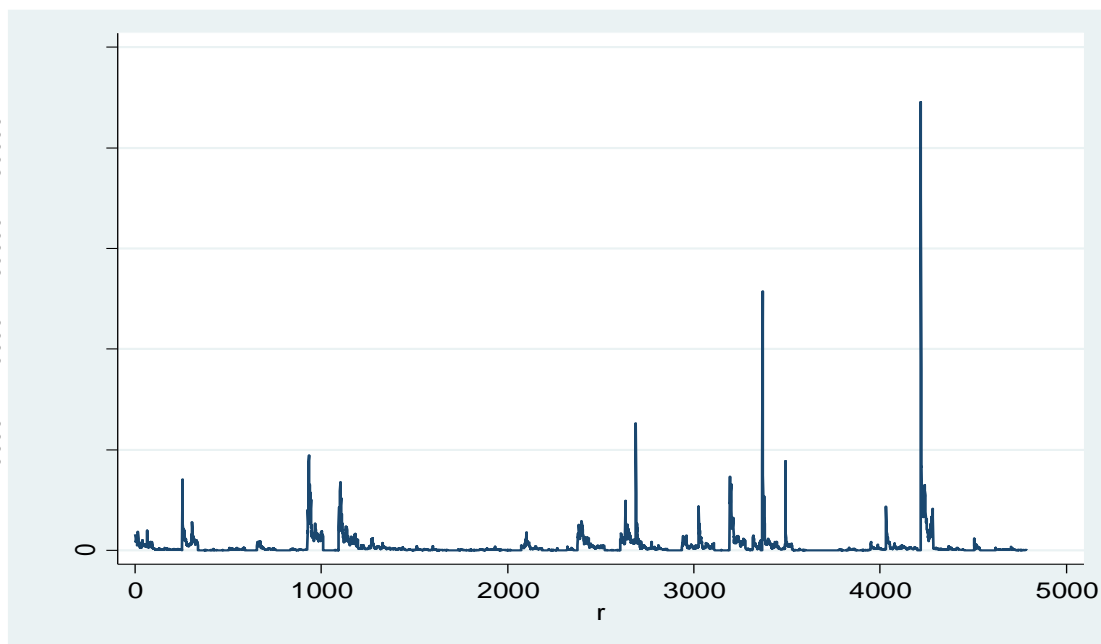
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Figure 3: Number of Deals against Time Periods

Traded volume is the stock market indicator that reflects the supply and demand for stocks of the 57 firms listed at the NSE. Figure 4 is evidence of the relationship of the trading activity and herding behaviour. We observed that although traded volume fluctuates with time, its movement is not as volatile as that of NSE share index and Average price. Nevertheless, a significant spike is observed towards the end of the time-grid, which is a clear indicator of herding pattern.
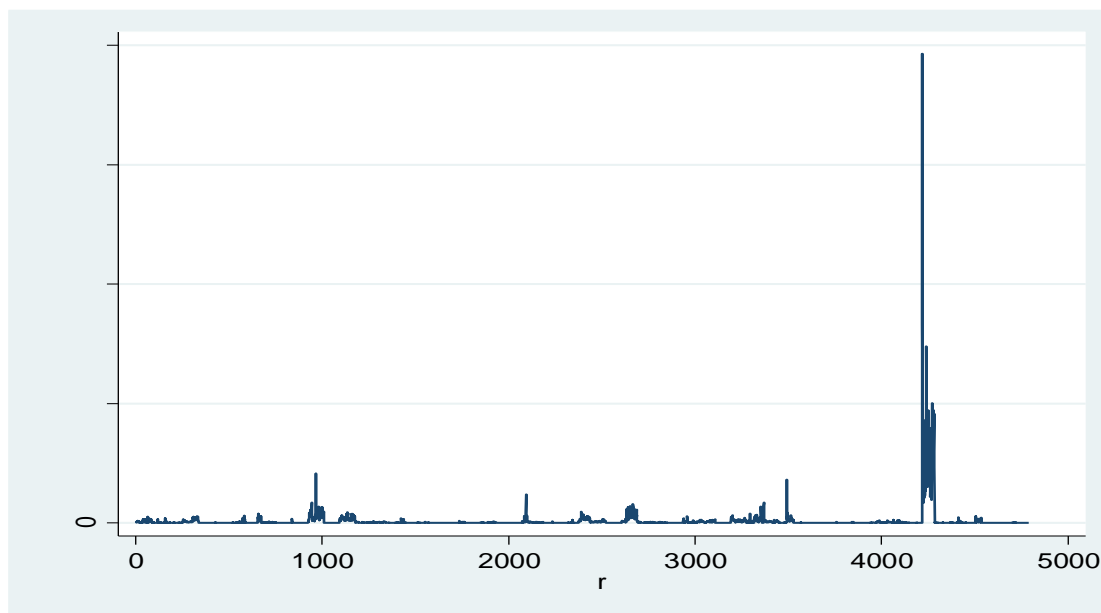
Figure 4: Traded Volume against Time Periods

Figure 5 shows tremendous volatility with respect to institutional purchases for all the firms under consideration. We observe systematic variations over the entire time period. The unstable fluctuations indicate herding patterns. The study also considered institutional sales to demonstrate herding pattern. Figure 6 below shows that the institutional sales have been systematically changing over the analysis time, analogous to Figure 4.6. Stock sales and purchase follow similar patterns which indicate herding behaviour from both the trends of purchases and sales.
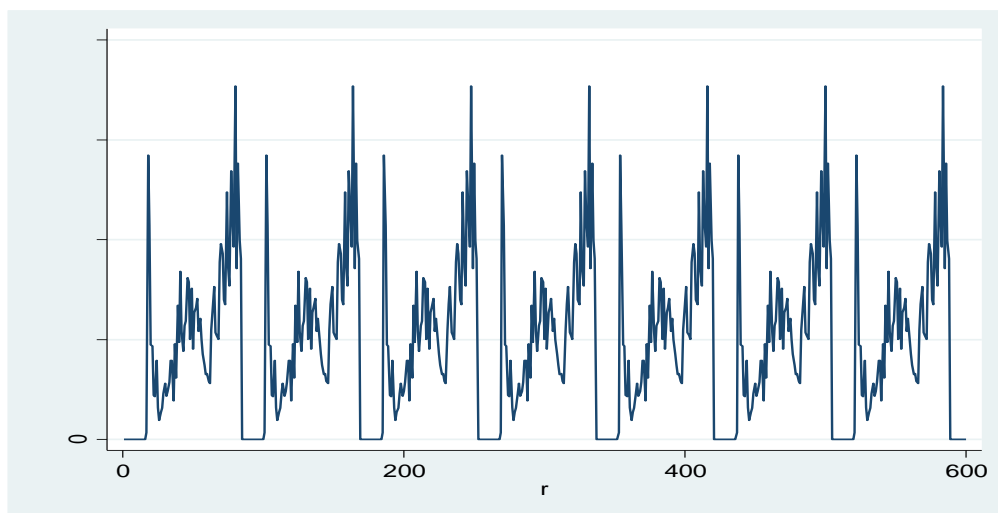
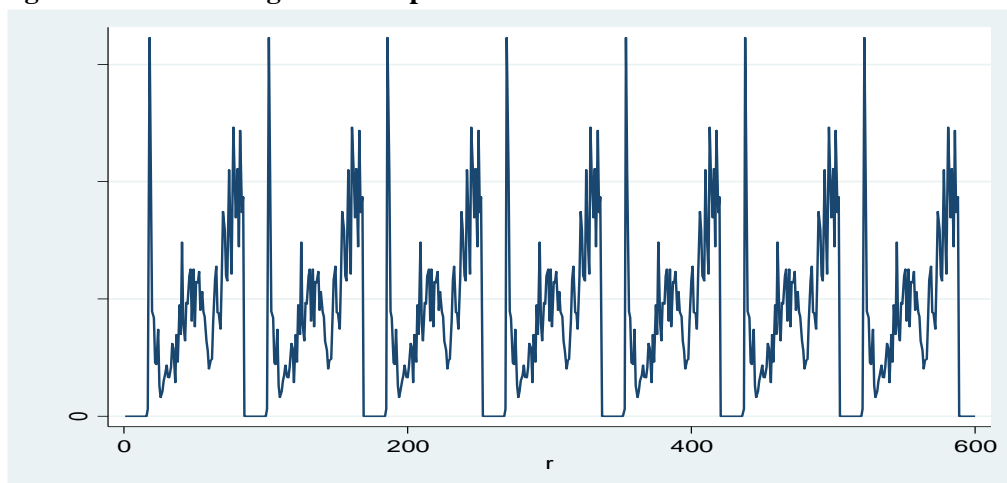**Figure 5: Purchases against time periods**

Figure 6: Sales against time periods

Figure 7 shows Cross Sectional Standard Deviation (CSSD) against time. This reveals significant herding throughout the entire time period for all the firms. Just like for CSSD, the presence of herding movement is corroborated by Cross Sectional Absolute Deviation (CSAD) as depicted on Figure 8.
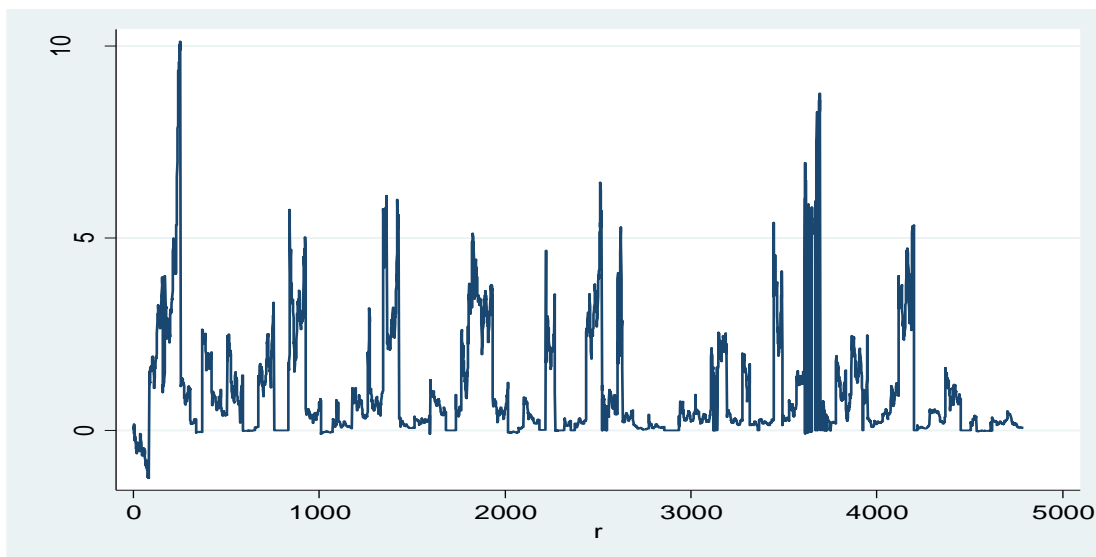
Figure 7: Cross sectional Standard Deviation (CSSD) against time periods
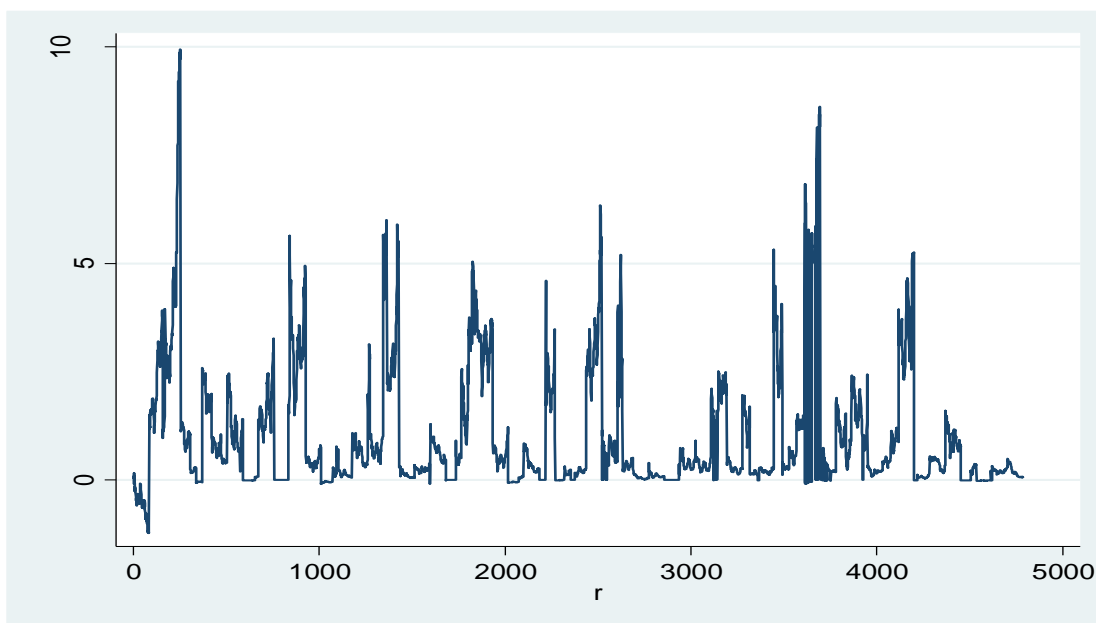
Figure 8: Cross Sectional Absolute Deviation (CSAD) against time periods

Herding and Stock Price Movement at the NSE

The second objective of the study was to establish the influence of herding behaviour on the stock price movement at the NSE. The previous objective observed how variations across the study is interested in finding out how this herding tendency with its stochastic nature associates with stock price movement at the NSE. Following Christie and Huang (1995), Chang, Cheng,

and Khorana (2000), Gleason, Lee, and Mathur (2003), Gleason, Mathur, and Peterson (2004), Demirer and Kutan (2006) and Demirer, Kutan, and Chen (2009); the cross sectional standard deviation (CSSD) is used to demonstrate the existence of herding and its implication on stock price movement at the NSE.

$$CSSD_t = \alpha + \beta_D D_t^L + \beta_U D_t^U + \varepsilon_t \qquad\qquad 1$$

Where $D_t^L = 1$, if the return on the aggregate market portfolio on month t lies in the *lower* tail of the return distribution; 0 otherwise, and $D_t^U = 1$, if the return on the aggregate market portfolio on month t lies in the *upper* tail of the return distribution; 0 otherwise and ε represents the random error term. Since this final model takes the log linear functional form, its interpretation proceeds as follows:

$$logCSSD^2 = -4.21 + 1.675 D^U + 2.587(D^L)^2 + \varepsilon \qquad\qquad 3$$

For every unit increase in the D^U term, the outcome is $(e^{1.675})5.338$ times higher and for every unit increase in the $(D^L)^2$ term, the outcome is $(e^{2.587})$ 13.290 times higher. When both D^U and $(D^L)^2$ are assumed to be equal to zero, the outcome reduces by 4.21 (see Table 1). All the coefficients are statistically significant since their p-values are 0.000 and none of their confidence intervals includes zero.

Table 1: Results for Random Effects Model

Variables	LCSSDsq
DU	1.675
	(5.24)**
DLsq	2.588
	(114.48)**
_cons	-4.215
	(8.07)**
sd within	2.68
sd between	2.14
variance across panels	0.61
N	4,788

* $p<0.05$; ** $p<0.01$

The coefficients are in bold; the t statistics are in parenthesis.

The positive signs of the regressors and their statistical significance indicates that the stock price movement demonstrates significant herding behaviour which is in line with the findings of Christie and Huang, (1995); Chang, Cheng, and Khorana, (2000); Gleason, Lee, and Mathur, (2003); Lin and Swanson, (2003); Gleason, Mathur, and Peterson, (2004); Demirer and Kutan, (2006); and Demirer, Kutan, and Chen, (2009).

Chang (2000) uses the cross-sectional absolute deviation of returns (CSAD) as a measure of return dispersion. Its functional form is as shown in equation 4;

$$CSAD_t = \alpha + \gamma_1 |r_{m.t}| + \gamma_2 r_{m.t}^2 + \varepsilon_t \qquad\qquad 4$$

The results show that there is a statistically significant negative relationship between the dependent variable and both of the independent variables. This is consistent with Chang (2000). The sigma_u and rho of zero, shows that there is no standard deviation within groups and no variance attributed to the differences within panels. The sigma_e on the other hand indicate that the standard deviation between groups is 0.0101719.

Table 2: Results for Random Effects Model

Variables	L2_CSAD
L2_rlsq	-2.482
	(96.44)**
L2_rl3	-1.417
	(59.14)**
_cons	-0.021
	(19.95)**
sd within	0.00
sd between	0.01
variance across panels	0.00
N	725

* $p<0.05$; ** $p<0.01$

The coefficients are in bold; the t statistics are in parenthesis

Both results of CSSD and CSAD regressions correspond to a priori expectations stated in the methodology section. This indicates that there is herding in the NSE market. Moreover, the graphical illustrations show that there is herding in the stock market with respect to number of deals, average price, total purchases among other market parameters. This shows that herding has an effect on prices of shares and stocks.

CONCLUSIONS AND RECOMMENDATIONS

Herding is the most important issue at the NSE especially to institutional investors, fund managers among other investors. Since this study focussed mainly in confirming herding behaviour at the NSE, we recommend based on the findings that the market participants (57 targeted firms) and those not yet listed to be aware and sensitive since as this contributes to market inefficiencies.

Stock market parameters are of major concern to the policymakers as they are considered as the leading indicators of economic activity. Our evidence shows that herding pattern experienced at NSE is linked to particular periods implying that speculations may be wrong at times. Merging of trading policies by the regulators may have sensitive implications for the stock market in relation to efficiency as herding might systematically lead to mispricing of the

financial assets and stimulation of asset effervesces. Idiosyncratic herding phenomenon detected can either be reduced or eliminated from portfolios through different diversifications as suggested by the literature. Diversifications are meant to reduce the levels of exposure to risk by merging various investment like bonds, real estates, stocks among others which are all not likely to be moving towards the same direction.

Therefore, the government and policy makers should take it into consideration as this behaviour may spur unnecessary volatility which is likely to destabilise the market and increase the fragility of the financial system. By encouraging diversification, also herding behaviour would be decreased by the simple fact that assets cannot move in the same direction at the same time and rate. It leads to consistent performance under varied range of conditions pertaining to the economy like, GDP, recession, inflation, fiscal and monetary policies among others. Note that volatility and abnormal information flows impede the reliability and accuracy of investment prediction.

The study found that stock price returns that had a positive influence on stock price movement. This implies that when herding is present, stock price movement increases which is consistent with Christie and Huang (1995) and a negative influence on stock price movement as per Chang (2000). We rely on the latter model to inform the policy recommendation as compared to the former since the model by Christie and Huang (1995) will not generate reliable results as per the literature. Herding behaviour leads to immense reactions to stock price movement. As stock price increases, herding reduces by a certain amount.

To the stakeholders and policy makers; to unlock this challenge, the number of listed firms should be increased at avoid paucity of daily or monthly trading by firms and subsequent lack of liquidity within Nairobi securities exchange. From the analysis, it is observed that some firms at the NSE trades for a certain period and some period they fail. This is a challenge given few investment opportunities present and it discourages the new firms planning to enter the market. Some firms could move in and out of the stock contributing to poor overall performance. A good number of firms analysed experienced monthly trading with herding characteristics. If market participants follow this inclinations, Hadiwibowo, (2010) and Demirer and Kutan, (2006) warn that the volatility of returns might be aggravated and consequently the financial systems might be destabilized especially during a crisis period.

Therefore, the government should try to privatize some of its enterprises to enhance public participation in an effort to stabilise stock prices. This should be accompanied by alliances with exchange securities from other countries like Uganda, Tanzania among others in a union referred to as Cross Border Exchange Coalitions (CROBEC) but enhance the use of information technology among other techniques in exchanging and sharing information. The policy makers need further to consider forecasting the financial instability and thus regulate herding patterns in advance.

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